EFFECTS, ATTRIBUTES, AND PREDICTIONS OF PARENTAL INVOLVEMENT DURING EARLY TRANSITION: DOES RACE/ETHNICITY MATTER? EVIDENCE FROM THE FACES 1997 COHORT

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Parental involvement is a critical component of early childhood education (ECE) programming with the aim to support child development. However, the efforts designed to support this aim are challenged by the increasing diversity in race/ethnicity in ECE classrooms. First, parents from different racial/ethnic backgrounds seem to have different patterns and levels of parental involvement, and the effects of multifaceted parental involvement on child outcomes seem to differ by race/ethnicity. Second, within ECE classrooms, it remains challenging to support meaningful parental involvement for children and families from diverse racial/ethnic and linguistic backgrounds. This dissertation aimed to address these issues by investigating the within- and between-group variations regarding the effects, attributes, and predictions of parental involvement on child readiness and growth during early transition. Two independent but related studies were conducted. The first study examined the moderation effect of race/ethnicity and multifaceted parental involvement on child outcomes. The second study tested the moderation effect of race/ethnicity and ECE attributes (i.e., teacher and classroom characteristics) on multifaceted parental involvement. The aim was to understand what ECE programs can do to

support child development via investing in meaningful parental involvement for *all* children and families.

Data from the Head Start Family and Child Experiences Survey (FACES) were used because these families are at higher risk of school failure. Four groups were included: White, Black, English-speaking Hispanic, and Spanish-speaking Hispanic. Three facets of parental involvement were investigated (i.e., school-based involvement, home-based involvement in cultural activities, and home-based involvement in learning activities). The theory of ecology, social capital, and cultural capital were applied to guide the theoretical frameworks. Findings of the first study revealed that home-based involvement in cultural activities emerged as a stronger predictor of child outcomes within the White and Black samples; whereas school-based involvement was a stronger predictor within the Hispanic groups. In the second study, ECE attributes had positive effects on most groups except the Black sample. This dissertation has significant implications for policy issues related to the readiness gap during early transition as well as parental involvement practices within the Head Start framework.

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PREFACE

Parents are children's first and lifelong teachers. As an educator, researcher, and leader in the field of education, I believe that we cannot do our work right without involving parents in children's educational process. This is not an easy task especially when our classrooms have become more and more diverse in culture and race/ethnicity. This dissertation is about the way in which parental involvement may have an impact on children from different racial/ethnic and linguistic groups, and in which early care and education educators can do to support parents' involvement in their children's educational lives. I believe this work also provides an insight regarding how we should prepare future educators for the increasing multicultural classrooms.

With respect to my writing this dissertation, I have been fortunate enough to be surrounded by people who affected my motivation to finish this book. First of all, I thank Dr. Stephen Bagnato for being the fair and supportive advisor. His confidence in me made me a stronger person when I faced difficulties. In addition, his comments on various theoretical and textual issues have contributed to the quality of this work. I also greatly appreciate Dr. Kevin Kim for his prompt support when I was stuck with my analyses. He had definitely an irreplaceable role in my committee. I also want to express my gratitude to my colleagues at Early Childhood Partnerships program at the University of Pittsburgh for the various ways in which they have supported me. Lastly, I thank my parents, sisters, families, and friends in Taiwan and the U.S for believing in me. Without you, I would have been lost.

1.0 INTRODUCTION

The U.S. government has made child readiness one of the driving forces of its education policy (National Education Goals Panel, 1998) in order to equalize disparities in schooling experiences and pre-academic and developmental outcomes across socioeconomic class and racial/ethnic groups upon kindergarten entry. A report based on a nationally representative kindergarten sample in 1999 revealed that 31% of children entering kindergarten were not proficient in recognizing letters, and 42% did not demonstrate positive behaviors that were associated with successful adjustment in the classroom (West, Denton, & Germino-Hausken, 2000). A majority of lower-achieving kindergartners were from low-income and racial/ethnic minority backgrounds (National Center for Education Statistics, 2010). The population of children born into poverty and of racial/ethnic minority backgrounds are growing (U.S. Census Bureau, 2008), and the issues regarding the readiness gap have become urgent and critical.

Research has demonstrated that early care and education (ECE) program participation is one of the most significant pathways to close the readiness gap across social class and racial/ethnic groups (Barnett, 1995; Currie & Thomas, 1995, 2000; Gormley, 2008; K. Magnuson, Meyers, Ruhm, & Waldfogel, 2005; Zill et al., 2001). Among various types of ECE programs, Head Start is a federal-local matching grant early intervention program that mainly serves children and families who are at risk due to poverty. Over the past few decades, Head Start has successfully boosted children's test scores upon kindergarten entry regardless of

race/ethnicity (U.S. Department of Health and Human Services, 2010; Zill, Sorongon, Kim, Clark, & Woolverton, 2006). However, the bad news is that these early gains tend to fade-out after children transition to elementary school (U.S. Department of Health and Human Services, 2010; Zigler & Styfco, 2004). A recent report, entitled the Head Start Impact Study, showed that access to Head Start had positive impacts on several aspects of children's school readiness during their time in the program (U.S. Department of Health and Human Services, 2010). The effects were more profound for 1) children with lower cognitive skills upon Head Start entry; 2) Dual Language Learners (DLLs); and 3) Black children. Unfortunately, these early gains were "washed out" by the end of 1st grade. To strengthen the effectiveness of Head Start, researchers must identify the mechanisms that not only facilitate readiness but also bridge children's early learning experiences with later schooling.

To address the issues of the readiness gap and the myth of "fade-out", this dissertation used a core theoretical perspective – the family support hypothesis – to study Head Start families during the period of early transition from preschool to first grade (Reynolds, Magnuson, & Ou, 2006). *Parental involvement* in children's education was used to measure the concept of family support (Reynolds, 1992, 2004; Reynolds, et al., 2006). The term parental involvement is used to describe all patterns of parent participation in children's education and learning across ecological contexts, including home, school, and communities (Epstein, 1995). The philosophy of parental involvement entails parents, educators, and communities working toward the common goal of optimal education with shared responsibility for student outcomes (Bronfenbrenner, 1974; Epstein, 1995; Gestwicki, 2004). Previous research indicates that parental involvement is one of the key mechanisms through which early intervention programs exert their influences on

children's developmental and academic trajectories (Englund, Luckner, Whaley, & Egeland, 2004; Ou, 2005; Reynolds, 1992, 1999; Reynolds, Mavrogenes, Bezruczko, & Hagemann, 1996).

Head Start has been grounded in a family-centered philosophy since its inception. Head Start believes that the success of early intervention for high risk children and families is rooted in "changes" within families and communities. One or two years of Head Start participation can have a direct and positive impact on children. However, if family functioning and program involvement are not improved, the effects of early intervention are much less likely to be extended once the intervention is discontinued (Bronfenbrenner, 1974). Therefore, guided by the Head Start Performance Standards (U.S. Department of Health and Human Services, 1998), Head Start staff are required to build collaborative partnerships with parents and families through engagement in various aspects of program activities (Head Start Bureau, 1999). It is assumed that the enhanced parental involvement in children's learning will provide a critical source of education and social support that promotes children's development over time (Reynolds, et al., 2006; Reynolds, et al., 1996). Research has shown that parents of Head Start children demonstrate higher levels of involvement compared to parents of children in other types of preschool programs (Rimm-Kaufman & Pianta, 1999), and higher levels of involvement in Head Start is positively associated with child readiness outcomes in both cognitive and social-emotional capabilities (Bryant, Peisner-Feinberg, & Miller-Johnson, 2000; Castro, Bryant, Peisner-Feinberg, & Skinner, 2004; Fantuzzo, Tighe, & Childs, 2000). Studies also suggest that parental involvement is a protective factor that offsets the negative effects of poverty on child readiness and development (Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005; Gershoff, Aber, Raver, & Lennon, 2007; Jimerson, Egeland, & Teo, 1999; Raver, Gershoff, & Aber, 2007).

The benefits of parental involvement have drawn policy makers' attention. Major legislation – The National Educational Goals 2000 (NEGP: 2000) – has made parental involvement a national priority. NEGP defines its goal # 8 in the following way: By the year 2000, every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children (National Education Goals Panel, 1999). Within the Head Start framework, every year, Head Start programs are required to report the extent of parental involvement in their programs through their Program Information Reports (PIR's) that are guided by the Head Start Performance Standards (Head Start Bureau, 1999). Beyond these legislative mandates, several professional organizations point toward inclusion of parental involvement for young children as a measure of a quality program. For instance, the National Association for the Education of Young Children (NAEYC) has developed standards indicating that the infusion of parental involvement in schools for young children is one criteria for high-quality program accreditation (National Association for the Education of Young Children [NAEYC] & National Association of Early Childhood Specialists in State Departments of Education [NAECS/SDE], 2003).

Statement of the Problems

The promising features of parental involvement are not in question; however, the effectiveness of efforts designed to support child development and achievement through increasing parental involvement may be challenged by the increasing diversity in race/ethnicity within ECE programs. This concern is driven by the fact that parents of children from different cultural and racial/ethnic backgrounds demonstrate different levels of involvement (Jackson & Remillard, 2005; López, 2001; Stevenson, Chen, & Uttal, 1990). The effects of parental involvement on student achievement are moderated by race/ethnicity (Desimone, 1999; Fan,

2001; Lee & Bowen, 2006). In other words, while much research supported the claim that parental involvement in general is positively associated with child development and student achievement (Bryant, et al., 2000; Fantuzzo, McWayne, Perry, & Childs, 2004; Fantuzzo, Tighe, & Perry, 1999; Sui-Chu & Willms, 1996), other research found that certain types of parental involvement are associated with lower levels of achievement among certain racial/ethnic groups (Desimone, 1999; Hong & Ho, 2005; Lee & Bowen, 2006). These findings suggest that parents of children from diverse cultural and racial/ethnic backgrounds seem to have different perceptions regarding what they should do to support their children's learning (Jackson & Remillard, 2005; López, 2001; Stevenson, et al., 1990). Nevertheless, even when they are actively involved in their children's education, the effects of parental involvement are not equally distributed to children and families from different cultural and racial/ethnic backgrounds. One may argue that a major tool that is identified to close the readiness and/or achievement gap may have limited ability to do so because of inequality in the levels of involvement as well as the inequality in the opportunities for the benefits of parental involvement across racial/ethnic groups (Lareau, 2001).

In addition, parental involvement in general has been associated with young children's cognitive and social-emotional readiness (Arnold, Zeljo, Doctoroff, & Ortiz, 2008; Bryant, et al., 2000; Fantuzzo & McWayne, 2002; Fantuzzo, et al., 2000; Fantuzzo, et al., 1999). Therefore, the factors that influence parental involvement are of considerable interest to policy makers. Accumulated literature has identified that family socio-demographic and psychological characteristics (e.g., poverty, employment, education, family distress) are significant barriers to involvement. Fortunately, schools' and teachers' practices seem capable of helping parents overcome these barriers to becoming involved. After investigating the effects of a host of school

and family characteristics on parental involvement, Becker-Klein (1999) found that the effects of school contextual factors (i.e., school climate, family-school communication, teacher qualification) had greater effects on parental involvement than family and parent characteristics (i.e., family structure, employment, resources, and parents' childhood experiences of school) (Becker-Klein, 1999; Dauber & Epstein, 1993). In other words, even though family socio-demographic characteristics can be obstacles for parental involvement, when schools create a welcoming climate and provide opportunities for involvement, parents are likely to overcome the obstacles (Chrispeels & Gonz, 2004; Hoover-Dempsey & Sandler, 1997). These findings send an encouraging message to policy makers, program administrators, and practitioners about what ECE programs can potentially do to support parental involvement.

Yet, within culturally and racially/ethnically diverse ECE classrooms, the effectiveness of schools' and teachers' practices to involve parents may also be challenged. First of all, language barriers between parents and teachers is one common issue among migrant/immigrant communities (Bernhard, Lefebvre, Kilbride, Chud, & Lange, 1998; Garcia Coll et al., 2002; Stone, 2006). Parents who are not fluent in English may be discouraged when they have difficulties to communicating with teachers. Therefore, school factors may have limited impact on these minority parents if their needs are not addressed (e.g., with a presence of language interpreters in the school meetings). Second, racial/ethnic minority parents are often not clear about what roles they should play in the home-school partnerships (Bernhard, et al., 1998; Garcia Coll, et al., 2002). Literature suggests that parents of minority children tend to expect teachers to initiate the interactions and connections (Rimm-Kaufman & Pianta, 1999). However, teachers tend to expect bi-directional communication with parents (Baker, 1997). Without effective communication, the differences in expectations easily lead teachers to blame the less-involved

parents as not being responsible. As a result, these teachers and minority parents are less likely to have positive experiences with each other. Lastly, teachers tend to reported having poor relationships with parents from minority backgrounds (Hughes, Gleason, & Zhang, 2005). Without trustful and supportive relationships with teachers, parents are not likely to feel comfortable to interact with teachers or present in school settings. As school populations become ever more diverse, it is important to understand whether recent ECE efforts and practices to support parental involvement are effective for children from diverse racial/ethnic backgrounds.

1.1 PURPOSE OF THE DISSERTATION

To address the issues discussed aforementioned, the main purpose of this dissertation was to understand the within- and between-group variations in relation to the effects, attributes and predictions of parental involvement and child readiness and growth during the period of early transition. The ultimate goal was to understand whether parental involvement can address the issues of the readiness gap as well as the fade-out of early gains during the period of early transition. If so, it is critical to understand what early care and education program can do to support these parental involvement activities. A conceptual framework was proposed to examine these questions (see Figure 1). First, it examined the within- and between-group variations on the effects of parental involvement on child readiness and growth during early transition (Path A). Second, it investigated the within- and between-group variations on the effects of early care and education classroom contexts on parental involvement practices (Path B). It is important to note that, even though the terminology – "effect", was used in this study, it was referred to the directions between two factors rather than referring to any causal effects. In addition, it is a term

used in the structural equation modeling (SEM) (Crowley & Fan, 1997; McDonald & Ho, 2002) framework to explain the estimates of the associations between factors that were presented as pathways.

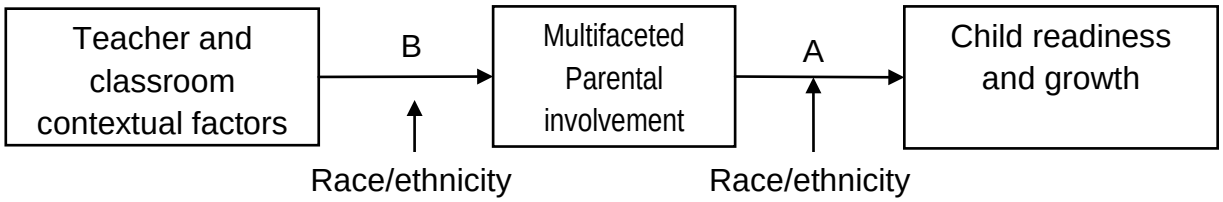


Figure 1. Conceptual model: Moderation effect of race/ethnicity among the links between teacher and classroom attributes and multifaceted parental involvement; and the links between multifaceted parental involvement and child readiness and growth.

This dissertation studied three facets of parental involvement that are highly valued within the U.S. educational system, including school-based involvement (PIS), home-based involvement in cultural activities (PIHCUL), and home-based involvement in learning activities (PIHLN). Because low-income children are at higher risk of school failure, this study included children and families from a large-scale study of Head Start families – Family and Child Experiences Survey (FACES) 1997 Cohort. In addition, it should be noted that one of the main reasons that this dissertation focused on the Head Start families is to avoid the confounding effect of social class on the effects of parental involvement on child readiness outcomes (Desimone, 1999; Fan & Chen, 2001). A total of four racial/ethnic groups were included: White,

Black, English-speaking Hispanic, and Spanish-speaking Hispanic. The distinguish between English-speaking Hispanic and Spanish-speaking Hispanic families are critical in that research has suggested that parent English proficiency is significantly associated with levels of parental involvement at home and at school (Bernhard, et al., 1998; Chrispeels & Gonz, 2004; López, Scribner, & Mahitivanichcha, 2001). It should be noted that, the term "Hispanic" is used in this dissertation since it is the term most often used in Head Start. However, the term "Hispanic" and "Latino" should be considered by readers as interchangeable (O'Brien et al., 2002).

Two separate studies were conducted to examine the conceptual model. The first study focused on the examination of Path A. The main research questions were: Do the effects of parental involvement on child readiness and growth differ across racial/ethnic groups? What aspects of parental involvement are more effective for whom? Because previous literature suggested that the effects of naturally occurred parental involvement are likely to be globally beneficial rather than domain specific (Fan & Chen, 2001; Keith et al., 1998), this study examined a wide array of child readiness outcomes to better capture the benefits of parental involvement, including vocabulary, literacy skills, early mathematics, classroom social skills, and classroom problem behaviors. These readiness skills are important predictors of later achievement (Raver, et al., 2007). They also explicitly represent various dimensions set forth by the NEGP and reflect the same multifaceted approach to school readiness (National Education Goals Panel, 1999). In addition, this study also investigated the longitudinal effects of facets of parental involvement on child growth during early transition. This is an important question because child longitudinal outcome (growth) is also an important goal that Head Start intends to achieve.

The second study focused on the investigation of the Path B. The research questions were: Do teacher and classroom contextual factors have differential effects on facets of parental involvement, both at home front and school front, among children from different racial/ethnic groups? What aspects of teacher and classroom contextual factors are more predictive of parental involvement behaviors for whom? A total of six classroom-level predictors was investigated, including classroom global quality, quality of teacher-child interaction, classroom climate of parental involvement, teacher attitude of parental involvement, teacher teaching experiences, and teacher education.

1.2 SIGNIFICANCE OF THE DISSERTATION

1.2.1 Importance to research

This dissertation aimed to advance the research on family support, home-school relations, and child development by addressing the multidimensional, longitudinal, and ethnic variation issues during the early transition period. This research makes significant contributions to the field of early childhood education in at least four ways. First, literature has indicated that racial/ethnic minority parents are less likely to demonstrate the types of involvement (e.g., literacy practice, volunteering) that are important for child readiness (Fan & Chen, 2001; Fantuzzo, et al., 2004; Foster, et al., 2005; Lee & Bowen, 2006; Wong & Hughes, 2006). A host of efforts has been put into the understanding of *how* and *why* parental involvement looks different within racial/ethnic groups. More studies are needed to understand *what* types of parental involvement are more effective for *whom* and *why*? What can early care and education programs do to support these

facets of parental involvement? This dissertation investigated these questions within the context of Head Start. Findings of the research have significant implications for Head Start programming as well as early childhood education programs that aim to support low-income children's developmental and educational outcomes.

Second, because children have different needs across developmental stages, the types of activities that are beneficial for older children may not be necessarily important for younger children (Drummond & Stipek, 2004; Henderson & Mapp, 2002). Given the fact that the majority of parental involvement research with racial/ethnic minority groups has been done with elementary or secondary school populations, greater understanding of the effects of parental involvement among younger learners may contribute to the knowledge about how to use parental involvement efforts to address the readiness gap.

Third, research has indicated a positive association between parental involvement and child readiness. Yet, it is still unclear to what extent such success has been translated into longer-term child outcomes in a large scale study. Earlier studies investigating Head Start children's improvement in readiness outcomes tended to use pre-test and post-test design (Bryant, et al., 2000). Such methods may provide limited and false information regarding the stability or rate of change over time. In addition, even though some studies have investigated the effects of parental involvement on students' academic trajectories from kindergarten to later grades (Dearing, Kreider, Simpkins, & Weiss, 2006; Dearing, Kreider, & Weiss, 2008), the critical period of early transition – from preschool to kindergarten – was missing in the research designs. Literature indicates that the effects of early intervention are likely to disappear when children transition from kindergarten to first grade (U.S. Department of Health and Human Services, 2010; Zill, et al., 2001). In addition, children and parents are likely to experience changes in home-school

relationships during early transition (Rimm-Kaufman & Pianta, 1999, 2005) (R. C. Pianta & Kraft-Sayre, 1999; Rimm-Kaufman & Pianta, 1999, 2005). This research adds new information to recent literature by including the time point – preschool to kindergarten – in the research design. Specifically, this research explains *how much* of the variations of Head Start children's developmental trajectories during early transition are explained by parental involvement. Finally, because this research investigates within and between group differences, findings have significant implications for research in positive development of minority children and families.

Finally, to understand the role of race/ethnicity on the effects of parental involvement on the readiness gap, and the effects of school practices on parental involvement, this dissertation applied the concepts of social capital and cultural capital theory (Bourdieu, 1977; Coleman, 1988; Lareau, 2001) to guide the development of theoretical framework. This dissertation is one of the few attempts to apply these concepts during early childhood education. Findings have significant implications for the development of the social capital and cultural capital theory.

1.2.2 Importance to policy issues

This research can have a significant implication for early childhood educational policy. Parental involvement is not a new concept in early childhood education programming. Since its inception, Head Start has been recognized as a two-generation program. Head Start staff are required to actively involve parents in programs (Head Start Bureau, 1999). However, Head Start programs' and teachers' efforts to involve parents still vary across programs, especially the efforts that encourage parental involvement outside of school contexts (McBride, Bae, & Wright, 2002). Because Head Start parents are very likely to experience barriers to parental involvement, it is necessary and critical for both policy makers and practitioners to understand what they can do to

support parental involvement practices in the ways that meet the needs of families and children. Findings of this dissertation provide guidance for Head Start administrators to understand 1) what types of involvement activities are effective for families and children from different cultural and racial/ethnic backgrounds, and 2) what classroom-level contextual factors are associated with these types of parental involvement. As such, the culturally sensitive practices and intervention can be provided to all children and families that they serve. In summary, this research provides valuable information for Head Start administrators and policymakers to understand what they can do to support child readiness (Goal 1) as well as growth through investing in parental involvement (Goal 8) (National Education Goals Panel, 1998).

This study has the following characteristics:

First, this study used a large-scale longitudinal survey data – FACES 1997 Cohort. It is a national representative sample 3-, 4-, and 5- year-old children enrolled in Head Start in the fall of 1997. These children were followed in a consecutive four to five years after enrolling in programs. The complex sampling design and multiple methods of data collection allow researchers to explore the rich information and gain a national picture about the cognitive and social-emotional readiness as well as growth trajectories from preschool to first grade. Second, this research focused on multiple types of parental involvement and child cognitive and social-emotional outcomes during early transition. If the research indicates strong associations among the proposed pathways, it will help policy makers and program administrators to establish a timely and appropriate policy for parental support. The findings of this research also help parents to determine to what extent their involvement in children's education can make a difference on their children's achievement as well as growth during early transition. Third, this dissertation investigated racial/ethnic differences in the mechanisms of parental involvement within Head

Start classrooms as well as its impact on child outcomes. Findings can be used to guide the parents in different racial/ethnic groups to help their children in a developmentally and culturally appropriate way. Finally, people in different immigrant/migrant communities may benefit from the result of the study. It may help them to better understand the performance of their children and what they can do to support their children's adaption and progress in school.

1.3 LIMITATIONS OF THE DISSERTATION

This study has some limitations. First, this study used only quantitative data. The mixed method is most appropriate to find the relationship and the real picture about parental involvement and child development. Issues such as cultural norms and values are not possible to measure using quantitative data. Second, this research investigated the effects of naturally occurring parental involvement within the Head Start program instead of specific parental involvement intervention. Therefore, there is no control or treatment group. The non-experimental nature of the data cannot establish a true causal relationship between variables and outcomes. Third, the FACES 1997 data in relation to parental involvement are comprehensive; however, it may be limited because the selected variables may not capture the broad scope and complexity of parental involvement among racial/ethnic minority communities. Regardless, this limitation does not affect the significance of this research because the selected variables have been found significantly related to children's readiness outcomes. Thus, these variables may be sufficient for the purpose of this dissertation. Nevertheless, the between-group comparison regarding the effectiveness of the selected variables on child outcomes may be culturally biased. To compensate for this limitation, the within-group differences among racial/ethnic groups are also conducted to get a less biased

understanding of the effectiveness of parental involvement. In sum, maybe the selected variables are culturally biased, if they are essential and effective for children from all groups, this bias may be acceptable for the purpose of this research. Finally, the sources of parental involvement were primarily from parent reports. Even though literature has suggested that observation data should be used to get a less biased measure of parental involvement, this type of data is not available in the FACES design (McNeal, 1999; Zellman & Perlman, 2006). Regardless, this limitation may be minor in this research because literature has indicated that teachers tend to have less knowledge in relation to types of involvement that takes place outside of the school especially among families from minority backgrounds (Baker, Kessler-Sklar, Piotrkowski, & Parker, 1999; Bakker, Denessen, & Brus-Laeven, 2007; Beasley, 2002; Zellman & Perlman, 2006). Therefore, parent reports of parental involvement seem to be an acceptable measure for the purpose of this research.

1.4 ORGANIZATION OF THE STUDY

The first chapter of this research states the problem of the study, purpose and significance of the study, and limitations of the study. The second chapter provides the theoretical framework of this research. By reviewing existing research about parental involvement, the second chapter guides and shapes this dissertation. The third chapter explains the hypothetical model, research hypothesis, methods, results, and discussions for the first study. The FACES 1997 Cohort is described in terms of its sample design, data collection method and design weights in the methodology section. The first study used the FACES 1997 Cohort data collected during the period of fall 1997 to spring 2000. The forth chapter explains recent literature, the hypothetical

model, research hypothesis, methods, results, and discussions for the second study. The FACES 1997 data collected during the period of fall 1997 to spring 1998 was used for the second study. The last chapter includes the in-depth discussions of findings of this dissertation, and provides directions for future research.

2.0 LITERATURE REVIEW

In this chapter, two theoretical perspectives are reviewed to frame the overarching rationale for this research: the ecology theory (Bronfenbrenner, 1977) and the social capital (Coleman, 1988) and cultural capital theory (Bourdieu, cited in Lareau, 2001; Bourdieu, 1977). Ecological models have been applied widely in home-school connections research in early childhood literature. Ecological models provide a theoretical framework about *how* and *why* parental involvement is associated with child development. However, facing the increasing populations of children and families from culturally, linguistically, and racially/ethnically diverse backgrounds, ecological models seem to be limited because the issues of social location, social history, majority and minority status, discrimination, and culture are minor to the model so as to be trivialized in the analyses (Feuerstein, 2000; Garcia Coll, et al., 2002; Garcia Coll et al., 1996; Johnson et al., 2003; Lee & Bowen, 2006). To accommodate this limitation, the social capital and cultural capital theory are reviewed to understand *how* culture and race/ethnicity play a role to influence the relationship between home and school. The social capital and cultural capital theory has been used to explain education inequality in primary and secondary school education (Lareau, 2001; Lee & Bowen, 2006). This dissertation is one of the few attempts to apply this theory into early childhood education.

2.1 THEROETICAL FRAMEWORKS

2.1.1 Ecological perspective of parental involvement

The ecology theory was originally proposed and promoted by Urie Bronfenbrenner in 1977. The ecology theory emphasizes the dynamic and bidirectional relationships between individuals (e.g., parent, child, teacher, and peer) within and between ecological contexts (e.g., home, school, community). From ecological perspectives, the continuities in relation to attitudes, values, practices, and ideologies across ecological systems are assumed for optimal child development. Epstein (1995) applies this concept and describes the relationship between home and school as one of the overlapping spheres of influence that exists for the benefit of children's learning, socialization, and development. The degree of overlapping represents the degree of congruency in child-rearing practices, values, and attitudes across ecological settings (spheres). Intervention research applying the ecology theory to explain educational inequality between social classes and racial/ethnic groups tends to focus on the strategies and practices that decrease levels of discontinuities and divergence between these overlapping spheres (ecological contexts).

Parental involvement practices are thought to be effective strategies to facilitate the congruence between individuals across ecological settings. For example, when parents go to school and communicate with teachers frequently and effectively, they are more likely to negotiate their differences and eliminate the discontinuities regarding educational expectations and attitudes. In addition, through visits to school, parents are more likely to learn developmentally appropriate practices and gain skills that can help their children learn outside of school contexts. It is believed that the dynamic exchanges in information between parents and teachers will have a positive impact on parents' practices at home (e.g., parents may demonstrate

the behaviors that teachers model in the classroom) as well as teachers' practices in classrooms (e.g., teachers may be able to provide more culturally sensitive practices in classroom). Thus, these practices may have a direct impact on children's developmental outcomes.

The relationships between parents, children, teachers, schools and communities are not static; instead, they change over time (Rimm-Kaufman & Pianta, 2000). The academic and developmental outcomes of a child depend on the transition of this relationship. Rimm-Kaufman and Pianta (2000) suggest that when children move from preschool to kindergarten, new ecologies emerge. Child-school and parent-school relationships consequently change. Children face new demands and new standards; children enter into a new peer group; parents interact with different teachers. These changing dynamics have a direct impact on children's learning outcomes. School's practices to involve parents during this critical period (e.g., send out newsletter, take parents and children to visit future school) are thought to be an effective strategy to smooth the process of transition (National Center for Early Development and Learning, 2002; R. Pianta, 2002). It is assumed that children will experience less disruption if their parents are involved in the process and help them through it.

It is important to understand that although new ecologies (e.g., new classroom, new teacher, new peer group) that shape individuals' immediate experience begin to form as individuals make the transition, their previous experiences in previous ecologies also account for patterns of interactions and relationships between individuals, groups, and institutions in the new ecologies (Rimm-Kaufman & Pianta, 2000). For instance, a parent's decision to attend activities and events in kindergarten may be directly influenced by kindergarten contextual factors (e.g., school climate, policy, teacher outreach) (Becker-Klein, 1999; Gavin & Greenfield, 1998; Rimm-Kaufman & Pianta, 1999). Meanwhile, it can be also influenced by the parent's previous

involvement experiences in preschool (Englund, et al., 2004; Izzo, Weissberg, Kasprow, & Fendrich, 1999; Rimm-Kaufman & Pianta, 2005). If the parent had conflicts with preschool teachers, he/she may be hesitant and suspicious at the initial stage of the relationship with kindergarten teachers. Similarly, a teacher's decision to contact a parent regarding a child's misbehavior may be directly influenced by the teacher's experiences and skills in involving parents (Castro, et al., 2004), and it may also be shaped by the teacher's previous experiences with this family or similar families. In sum, not only is parental involvement in ECE program associated with child readiness, it is also indirectly associated with the child's later adjustment and achievement through parental involvement in later schooling (Izzo, et al., 1999).

2.1.2 Social capital and cultural capital perspective of parental involvement

The concepts of social capital and cultural capital theory has been used increasingly to understand how race and class influence the transmission of educational inequality (Coleman, 1994; Feuerstein, 2000; Lareau, 2001; Lareau & Horvat, 1999; Lee & Bowen, 2006; McNeal, 1999). According to Coleman (1994), social capital is "the set of resources that inhere in family relations and in community social organization that are useful for the cognitive or social development of a child or young person" (p. 300). In other words, social capital is a means by which parents can help their children gain socially desirable ends (e.g., school achievement). The focus of social capital is on the transformation of one's social position into social advantage by the use of networks and relationships.

Parents can gain social capital through engagement in school activities. For instance, through visits to the school (e.g., volunteering, observation in classrooms, networking with other parents), parents gain the access to beneficial information, parenting skills, and knowledge that

are developmentally appropriate (e.g., how to help with home reading, child-rearing practices, developmentally appropriate practices). When communicating with school teachers, parents receive information regarding their children's performance, progress, and upcoming events and activities. Parents also have access to resources in schools or communities (e.g., books, tools) to help their children learn. Parents can also gain the sources of social control, such as reaching agreement about behavioral expectations and educational values. These mechanisms help parents gain more social capital. Coleman (1988) also noted that the attention that parents provide children outside of school context is also an important aspect of social capital in that it not only persuades children the importance of education but also facilitates the congruence in expectations across contexts.

Seeing the positive association between parental involvement and child development, Coleman (1988) suggests that families can and should adopt certain norms to help advance their children's life chances. This approach suggests that the adoption of social capital by families will improve children's school experiences. Coleman (1988) believes that all schools have social capital, which refers to bonds between home and school, which influence student achievement via increasing families' social capital. However, some schools possess more social capital (e.g., trustful relationships with families) than do other schools; therefore, they are more likely to be able to promote higher levels of achievement. In addition, schools' understanding of their obligation to students, and the existence of norms that support high student achievement are also important factors that influence social capital (Coleman, 1994).

However, Bourdieu (1977) is less optimistic in this regard. Similar to Coleman, Bourdieu suggests that networks and relationships are critical to student success. Yet, Bourdieu argues that researchers cannot ignore the fact that inequality exists in the amounts of capital that individuals

have or are able to obtain. Bourdieu suggests that one source of inequality in access to desirable relationships is the fit between individual's culture and the culture of the larger society or the institutions in that society. Bourdieu (1977) introduces the concepts of *habitus* and *fields* to describe this fit. *Habitus* is "a system of dispositions" (that results from social training and past experiences) which leads an individual to act in a certain way and to think in a certain way. A *field* is "rules of the game" that represents a structured system of social relations at a micro and macro level. Following Bourdieu's definition, Lareau (2001) further defines fields as "composed of dominant organizations, professionals, and ideologies (i.e., standards encoded in professional training, professional organizations, and professional codes of ethics) (p. 84)." Applying these concepts into parental involvement research in early care and education classrooms, the habitus refers to the activities that a parent does to support his/her child's education (e.g., parental involvement); the field refers to the standards (e.g., values, expectations of parental involvement) that ECE programs hold regarding what a parent should do to support his/her child. When a family's habitus is consistent with the field in which the family is operating (e.g., when the field is familiar to and understood by the family), the family enjoys a social advantage (Lee & Bowen, 2006). The degree of congruence between a family's habitus and the field in which the family interacts with decides the family's cultural capital. The greater an individual's cultural capital, the greater his or her advantage in gaining social capital that will benefit family members. This argument also reflects Epstein's hypothesis that home-school relation is an overlapping sphere of influence on student achievement.

According to Lareau (1987, 1999, 2001), schools tend to represent and reproduce middle or upper class values and forms of communication (e.g., parents should present in school; both parents and teachers should initiate the involvement; parents should help with homework;

parents should be partners with schools and so on). Because of the hidden bias toward middle and upper class families, schools may put low income and racial/ethnic minority families at a distinct disadvantage because they must adapt to the dominant school culture to meet teachers' expectations. Lareau (1987) further supported this statement after observing that teachers tended to give better evaluations to students whose parents were involved. These observations are critical because it suggests that cultural capital (in the form of parental involvement) can influence student achievement.

In summary, while both social capital and cultural capital emphasize the importance of parental involvement, they have some minor differences. Coleman's social capital theory emphasizes the issues about between school differences in social networks that are available to parents. Coleman believes that schools should help parents to adapt their practices for their own good. Taken from different points of view, Bourdieu's argues that the hidden biases toward middle- and upper-class families within schools are the sources of inequality that may prevent parents from gaining social capital and cultural capital. It is important to note that these two arguments are not in conflict; in contrast, they may compensate each other and provide a more complete picture to understand institutional effects on the development of minority families. The arguments of Bourdieu (1977) and Lareau (1987, 2001) focus on how social capital is magnified by cultural capital, while the arguments of Coleman (1988) focus on how social capital itself has an independent effect.

2.2 REVIEW OF THE LITERATURE

Both the ecology theory and the social capital and cultural capital theory describe the academic achievement of children as a partnership between home, school, and community. For this dissertation, the focus is on the relationship between home and school during early transition. For this part of the review, these two theories are applied to discuss recent literature. First, parental involvement, a means to acquire social capital, is positively associated with child development. Second, parents of children from different cultural and racial/ethnic backgrounds demonstrate different types of parental involvement that is influenced by their cultural norm. Third, the effects of different facets of parental involvement are not equally distributed to children from different cultural and racial/ethnic groups due to their variations in social capital and cultural capital.

2.2.1 Parental involvement and child development

One of the main challenges of studying parental involvement is that parental involvement is a multidimensional construct and is measured in numerous ways across the literature. There is no consensus in the field regarding what should be measured and what aspects of parental involvement are more effective (Fantuzzo, et al., 2004; Fantuzzo, et al., 2000; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004). Epstein (1995) suggests that a successful program generally incorporates six types of parental involvement activities: parenting, communication, volunteering, learning at home, decision-making, and collaborating with the community (see Table 1). Although developed within the K-12 education framework, Epstein's model has been modified for preschool settings to guide the development of comprehensive parental involvement

components in early childhood programs, such as Head Start (Fantuzzo, et al., 2004; Fantuzzo, et al., 2000; Fantuzzo, et al., 1999; Mantzicopoulos, 1997) and public school prekindergarten programs (Marcon, 1999; McBride, et al., 2002; McBride & Lin, 1996) for children who are at risk for later school failure. Except Collaborating with the community, the other five types of Epstein's typology are commonly grouped into two broad categories: home-based involvement (Parenting and Learning at home) and school-based involvement (Communication, Volunteering, and Decision making) (Becker-Klein, 1999; Fantuzzo & McWayne, 2002; Fantuzzo, et al., 2004; Fantuzzo, et al., 1999; Gavin & Greenfield, 1998). The distinction between school-based and home-based involvement is a concrete and parsimonious one that can be used with ease by researchers, policy makers, educators, and parents to support children's learning (Pomerantz, Moorman, & Litwack, 2007). Even though Collaboration with the community is an important component of ECE programming, this research will not be able to examine the effects of this type of involvement (Collaboration with the community) due to the limitation of the secondary data analysis design.

Table 1

Epstein's Framework of Six Types of Involvement

Typology	Examples	Category
Parenting	Schools assist families with parenting and child-rearing skills, child development knowledge, and creating home conditions that support children at each grade level.	Home-based
Communication	Schools involve parents by communicating about school programs, expectations, and student progress through effective two-way communications (e.g., memos, notices, conferences, newsletters, phone calls, and electronic messages).	School-based
Volunteering	Schools work to improve training and schedules to involve families as volunteers and as audiences to support students and school programs.	School-based
Learning at home	Schools involve families with the child in learning activities at home, including homework and other curriculum-related activities.	Home-based
Decision making	Schools include families as partners in school decisions and governance (e.g., attaining PTA, advisory council, committees, and other leadership opportunities).	School-based
Collaborating with the community	Schools coordinate services and resources for families and school with business, agencies, cultural organizations, and other groups to share responsibility for children's education.	Community based

School-based involvement typically requires parents physically engaging in activities in school, such as be a volunteer in classroom, go on field trips, attend teacher-parent meetings, or participate in decision-making process in PTA meetings (Epstein, 1995; Fantuzzo et al., 2000). From the ecological perspective, school-based involvement facilitates the congruence between home and school. From social capital perspective, parents gain social capital (e.g., parent-teacher relationship, parent-child relationship) through involving in school activities (Coleman, 1988; Lareau, 2001). As a result, school-based parental involvement may have a positive influence on child development because children my experience less interruption in relation to their learning experiences. In addition, when parents are more involved in school, they may learn more instructional techniques to assist their children learn in cognitive skills (e.g., mathematics, literacy, reading) at home. Literature has clearly documented the positive associations between school-based involvement and a wide array of child readiness skills. For instance, school-based involvement is positively associated with children's social skills (e.g., cooperative classroom behaviors, peer play interactions) and negatively associated with behavior outcomes (e.g., conduct problems) in classroom settings (Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005; Fantuzzo & McWayne, 2002; Fantuzzo, et al., 2004; Lamb-Parker et al., 1997; Zill et al., 2003). School-based involvement is associated also with greater academic achievement in cognitive outcomes, such as language scores (A. R. Taylor & Machida, 1994), reading scores (Miedel & Reynolds, 1999; Porter DeCusati & Johnson, 2004; L. C. Taylor, Clayton, & Rowley, 2004), and math achievement (Hill, 2001; Hill & Craft, 2003).

Home-based involvement refers to parents' practices related to school and education that take place within home and community settings (Fantuzzo, et al., 2000). Across the early childhood literature, home-based involvement is measured in numerous ways, such as

cognitively stimulative home environment (Gershoff, et al., 2007; Linver, Brooks-Gunn, & Kohen, 2002; Yeung, Linver, & Brooks-Gunn, 2002), home supervision (Watkins, 1997), literacy specific activities (Aikens & Barbarin, 2008; Gillanders & Jiménez, 2004), and involvement in cultural activities (Beasley, 2002; Gershoff, et al., 2007). Despite the differences in terms of measurement, home-based involvement in general has been associated with higher achievement scores (Miedel & Reynolds, 1999), higher scores in reading and math (Fantuzzo, et al., 2004; Hill, 2001), greater levels of motivation and self-efficacy (Dickinson & DeTemple, 1998), higher levels of self-control, responsibility and cooperative behavior at home (McWayne, et al., 2004), and greater levels of interactive peer play and lower levels of disconnected peer play both at home and at school (Fantuzzo, et al., 2004; Fantuzzo, et al., 1999). Specifically, evidence consistently shows that home literacy activities (e.g., book reading) are associated with the development of language and pre-reading skills in preschool children (Arnold, et al., 2008; Fantuzzo, et al., 2004; Hood, Conlon, & Andrews, 2008).

Among various types of home-based involvement, the distinction between learning activities (e.g., read to child, tell a story, play counting games) and cultural activities (e.g., going to museum, going to library, going to historical sites) seems to be meaningful (Beasley, 2002; Pomerantz, et al., 2007; Yan, 1999). Home-based involvement in cultural activities is so-called cognitive-intellectual involvement (Grolnick & Slowiaczek, 1994). This type of involvement may be not directly related to school per se; however, it may provide children a rich context to have closer relationships with parents and experience more language exchange. After examining the moderation effect of cultural activities and learning activities on child readiness outcomes, Beasley (2002) revealed that home-based involvement in learning activities was more effective when cultural activities were provided. It is possible that children comprehend and retain more

about the subjects, such as vocabularies, words, and math skills, when their learning involved with arts and fun activities with parents (Freeman, 1996)

Interestingly, even though both home-based involvement and school-based involvement are associated with children's cognitive and social-emotional outcomes, school-based involvement seems to be a weaker predictor of child outcome measures as compared to home-based involvement when both facets of involvement are estimated (Fantuzzo, et al., 2004; Izzo, et al., 1999; McWayne, et al., 2004). Such observation consequently raises a concern that research examining the effects of one dimension without understanding the effects of the other may lead to biased estimation. It is possible that the influence of school-based involvement on child outcomes may be partially explained by the unobserved variable - home-based involvement, and vice versa. To avoid biased estimation, it is essential to investigate multiple types of parental involvement simultaneously.

Finally, while the positive associations between parental involvement and child development and achievement is evident, the process through which parental involvement influences student performance is not well understood. Hoover-Dempsey and Sandler (1995, 1997) propose three hypotheses: modeling, reinforcement, and instruction, to explain the mechanisms of parental involvement. First, parents influence their children's development and educational outcomes through modeling of school-related behaviors and attitudes. For instance, when parents talk to their child about schooling, visit his/her classroom, talk to his/her teachers after school, and help her/him with school projects, they convey to the child that education is worth an adult's interest and time (modeling). Second, parents influence their children's educational outcomes by reinforcing specific aspects of school-related learning, such as giving their children interest, attention, praise, and rewards related to behaviors that are fundamentally

important to school success (reinforcement). It is assumed that children will engage in more of the rewarded behaviors, and will be more likely to do well in school. Through modeling and reinforcement, children gain psychological and social-emotional support from their parents toward their schooling; therefore, they are more motivated and confident in their learning processes (Pomerantz, et al., 2007). Research finds that when parents are involved, children seem to develop stronger positive attitudes toward schooling and have higher levels of locus of control (Epstein, 2000; Hong & Ho, 2005; Hoover-Dempsey & Sandler, 1995; Porter DeCusati & Johnson, 2004; U.S. Department of Health and Human Services, 2010). From the perspectives of reinforcement and modeling, parental involvement may be more globally beneficial for children's academic achievement in that it supports children's motivation, educational aspiration, and locus of control (Hong & Ho, 2005). Finally, parents can also have a direct influence on their children's academic outcomes by providing direct instruction in academic oriented activities, such as reading to child, teaching words and letters, and playing counting games. These activities are directly associated with children's readiness skills, especially in cognitive domains.

These mechanisms, however, are not necessary or sufficient in themselves to ensure positive educational outcomes. Hoover-Dempsey and Sandler (1995) argues that the influence of parental involvement on child outcomes is also tempered by two factors. First, parents' choice of involvement forms and strategies must be developmentally appropriate for the optimal child outcomes. As Pomerantz and colleagues (2007) argued in their review of literature, it is critical to understand *how* parents are involved in that it influences the effectiveness of the involvement. Although predominantly driven from the research with middle-class White families, Pomerantz and colleagues (2007) concluded that parental involvement may be particularly beneficial for children when it is autonomy supportive (e.g., "Parents support children in developing their own

schedules for doing their homework."), process focused (e.g., "When seeing children's work, parents focus on what fun children might have had in doing the work."), characterized by positive effect (e.g., "Parents express enjoyment toward their children when involving in outdoor activities"), or accompanied by positive beliefs (e.g., "When assisting with school work, parents convey to children that they have the potential to do well."). Second, the parent's choice of involvement activities should be consistent with the school's expectation for parental involvement. Again, these notations echo to Epstein's spheres of influence model - schools and parents should work together and negotiate their differences in order to create a common set of expectations that are appropriate for child, parent, and school. It also reflects the concept of cultural capital - parents' habitus in relation to parental involvement should be consistent with the habitus of parental involvement in school for the purpose of optimal child development (Coleman, 1988; Lareau, 2001).

2.2.2 Group differences in levels and patterns of parental involvement

From the cultural capital perspective, parents with different social and racial/ethnic backgrounds may display different levels and facets of parental involvement because they differ in regard to habitus (e.g., predispositions toward certain types of behaviors, attitudes, and perceptions). Past work suggests that parents of racial/ethnic minority groups have less involvement in school regardless of family socioeconomic status (Fan & Chen, 2001; Jeynes, 2005; Lee & Bowen, 2006); thus, school personnel tend to view these parents as passive in their approach to schooling. On the other hand, increasing evidence indicates that racial/ethnic minority parents do value education; however, they are involved in ways that are less visible to school personnel. Chavkin and Williams (1993), for instance, indicated that Black and Hispanic parents held similar views

of the importance of education and attitudes towards parental involvement as compared to White parents. In the other case, Stevenson, Chen, and Uttal (1990) found that Black and Hispanic mothers were even more likely to emphasize the importance of education than White mothers. Nevertheless, these minority parents were more likely to say that they would like to be doing more to help their children learn than White parents (Stevenson, et al., 1990).

However, when asked what parents actually did with their children at home before entering elementary school, interestingly, Stevenson and et al. (1990) found that Hispanic mothers reported providing significantly less instruction to their children than White or Black mothers (e.g., teacher alphabet, read words, stories, and numbers; count add and subtract) at home. According to the National Center for Education Statistics (National Center for Education Statistics, 1999), Hispanic children and Black children were less likely than White children to have been read to (62% and 72% versus 89%); told stories by (40% and 44% versus 53%) their families three or more times in the last week; visit the library (24% and 34% versus 40%) in the past month. Even though the statistical significance in terms of these activities between Black and White families was not found in the national data, some minor differences were observed in other studies. Nord, Lennon, Liu, and Chandler (1999) reported that teaching letters, words, songs, and music is more characteristic of Black families, while reading and telling stories is more typical of White non-Hispanic groups. Corresponding to what are proposed in the cultural capital theory, the habitus of parent-child activities are culturally influenced; therefore, the activities that are characteristic of one racial/ethnic group may not be characteristic of another (Nord, Lennon, Liu, & Chandler, 1999).

Even though Hispanic families are less involved in the types of engagement that are valued by school systems, recent ethnographic studies suggest that Hispanic families have

distinctly different habitus in relation to parental involvement (Gallimore & Goldenberg, 2001; Reese, 2002; Reese & Gallimore, 2000). For instance, research suggests that literacy practice (e.g., read to child) with young children at home, which is highly valued in the field (American ECE programs), is not a common practice among Hispanic communities. Hispanic parents believe that children reach the "age of reason" at approximately age 5 (Gallimore & Goldenberg, 2001). Therefore, these parents rarely engage in reading with their children before this age because they do not consider emergent literacy practice developmentally appropriate. Rather than engaging in reading, these parents believe that success in school depends on proper moral development. As a result, even when these Hispanic parents do read to children, they are mainly focused on teaching children the moral content of the book rather than promoting literacy skills (Gallimore & Goldenberg, 2001; Reese & Gallimore, 2000).

In addition, Hispanic families are involved in the types of activities that are *not* generally recognized as educationally meaningful by schools. For instance, López (2001) interviewed four immigrant/migrant families in a Southern state, whose children were highly successful in school, with respect to their involvement in their children's education. These parents did not engage in school-related activities or help their children with homework. From the school point of view, these parents were easily labeled as not involved based on the standards in the field (school). However, these parents considered themselves as being highly involved in their children's educational lives by teaching their children the value of education through the medium of hard work (López, 2001). They took their children to work with them in the fields at an early age, and gave them advice that the limited opportunities available if they drop out of school. Evidently, Hispanic families demonstrate different habitus of parental involvement that is inconsistent with

the field within the U.S. education system. As cultural capital theory proposed, such differences seem to put Hispanic children at risk.

It is important to note that the Hispanic community is not a homogenous group in relation to patterns and levels of parental involvement. Research suggests that English proficiency is a significant predictor of levels and patterns of parental involvement as well as child cognitive and social-emotional competences within Hispanic communities (Bernhard, et al., 1998; Hammer, Miccio, & Wagstaff, 2003; S. E. Ho & Willms, 1996; Turney & Kao, 2009). Even though the majority of Hispanic families speak Spanish at home, parents who cannot speak English well have less educational involvement with their children in school as well as at home. A parent who is not fluent in English may feel uncomfortable going to school; such parents may feel less confident to assist their children with school-related work; they may have limited knowledge regarding the U.S. education systems. Wong and Hughes (2006) found that parents who can speak English reported more shared responsibility than did parents who spoke more Spanish than English. It is possible that the Hispanic parents who can speak English may demonstrate the habitus that is more consistent with the field (ECE) because they may be more aware of schools' expectations and more capable of negotiating the differences with schools. Thus, they may have more social and cultural capital than do parents who only speak Spanish.

With regard to Black families, their habitus of parental involvement is different from the habitus of Hispanic families. Wong and Hughes (2006) found that within low-income families, Black parents tend to take a more active approach in their children's education; whereas Hispanic families tend to be less comfortable with teachers and schools. In addition, Black parents reported more shared responsibility with schools than did Hispanic parents. Nevertheless, different from other racial/ethnic groups, Black families tend to face different challenges when it

comes to home-school relationships. Lareau and Hovart (1999) argue that because of the historical legacy of racial discrimination, it is more difficult for Black parents than White parents to comply with the institutional standards of schools. Lareau and Hovart (1999) observed that Black parents were more likely to be suspicious and vigilant regarding the risk of unfair treatment for their children. Such suspicion is reflected in their daily practices. Research indicates that, regardless of family social classes, Black parents endorse *racial socialization* to their children at an early age as part of their involvement practices (Caughy, O'Campo, Randolph, & Nickerson, 2002; Coard, Wallace, Stevenson, & Brotman, 2004; Smith, Atkins, & Connell, 2003). Suizzo, Robinson, and Pahlke (2008) define racial socialization as

> Racial socialization is defined as the process that Black parents engage in to raise physically and emotionally healthy children who are Black in a society in which being Black is perceived negatively. Racial socialization is an example of a parental cultural model in that it is composed of interconnected ideologies and values (racial equality, freedom), long-term goals (physically and emotionally healthy and resilient adults), and short-term goals (child's developing understanding of the significance of being Black in U.S. society)…Racial socialization messages are generally communicated to children through a combination of family discussions, direct instruction about race, and observations of their parents interacting with people of their own and other races. (p. 289-290)

According to Suizzo et al. (2008), racial socialization is a multidimensional process including (a) cultural socialization (e.g., teach ethnic heritage, install ethnic pride), (b) preparation for bias (e.g., teach about racism, prepare child to face discrimination), and (c) egalitarianism (e.g., emphasize the similarities and equality of all races). Even though research

has indicated that racial socialization is positively associated with Black students' academic and developmental outcomes (Caughy, et al., 2002; Coard, et al., 2004), the practice of racial socialization is somewhat inconsistent with the rules of the game (field) in which professionals and educators define desirable family-school relationships as based on trust, partnership, cooperation, and respect (National Association for the Education of Young Children [NAEYC] & National Association of Early Childhood Specialists in State Departments of Education [NAECS/SDE], 2003). It is still unclear whether the practice of racial socialization may become a source of conflict in the process of constructing home-school partnerships. According to Lareau (2001), institutions (schools) may have different responses toward Black parents' expression of cultural and social capital. Like what was described in Graue, Kroeger, and Prager (2001), middle class Black parents who spoke up on behalf of their children were seen as "too quick to play the race card" (p. 483). Thus, rather than volunteering in the classroom, these parents were sent to the computer lab to supervise children's activities. Lareau and Horvat (1999) reported similar findings in their ethnographic study with working-class Black families. Therefore, to understand the transmission of educational inequality, one cannot ignore how individuals express their social and cultural capital in the institution, and how institutions respond to an individual's expression of cultural and social capital.

2.2.3 Effects of parental involvement in different racial/ethnic groups

Literature has supported Bourdieu's claim that families from different cultural and racial/ethnic backgrounds vary in terms of parental involvement (habitus). That is, a lot of efforts have been put into answering the questions: Why do racial/ethnic minority parents have lower levels of engagement in types of activities that are valued by the field (e.g., ECE, school)? What do they

do to support children's learning that is influenced by their cultural norm? as a next step, researchers should start answering the question: Are the effects of parental involvement equally distributed to children from all groups? If not, what types of involvement is more effective for *whom* and *why*? This is an important question for the purpose of intervention as well as ECE programming. If the effects of parental involvement are equally distributed to children regardless race/ethnicity, programs should target these practices to help children and families adopt these skills and practices. If the effects of parental involvement are not equally distributed to children across racial/ethnic groups, intervention programs should address these issues to develop more culturally-sensitive practices to sharpen the focus of intervention. However, there is no easy, unitary solution to this issue. Literature related to this issue is limited, and, unfortunately, the few studies that have been done with elementary and secondary school population have mixed findings (Berlin, Brooks-Gunn, Spiker, & Zaslow, 1995; Desimone, 1999; Fan, 2001; Jeynes, 2003; Lee & Bowen, 2006). That is, the effect of parental involvement varies across racial/ethnic groups across literature.

In the cases of effects of home-based involvement, for instance, Lee and Bowen (2006) found that parental involvement in homework help was positively associated with 3rd and 5th grade Black and Hispanic students' achievement and was *negatively* associated with White students' achievement (Lee & Bowen, 2006). McNeal (1999) reported *negative* association between parental monitoring and 8th graders' science achievement among White and positive association among Hispanic students. These authors argue that it is possible that White parents were more likely to be involved in homework help and monitoring when their children were struggling (e.g., reactive hypothesis); while parents of children from minority groups may help their children regardless because schooling was perceived as a means of improving children's

educational success among those groups (Lee & Bowen, 2006; Stevenson, et al., 1990). Different from Lee and Bowen (2006) and McNeal (1999), Desimone (1999) found *negative* association between parental involvement in homework help (check homework) and 8th graders' achievement in mathematics, readings, and grades across all groups (White, Black, Hispanic, and Asian). Jeynes (2005) conducted meta-analyses for 41studies and found that after controlling for family and child covariates, parental homework help was not an effective practice for overall academic achievement among White and racial/ethnic minority students from K-12 population. Instead of investigating specific involvement activities, Hill (2001) examined the link between home-based involvement (e.g., play games at home with the child, teach the child new things) and kindergarten age children's mathematics scores. Results showed that home-based involvement had positive effect on White students' achievement, but had no effects on Black students' math achievement.

There are several possibilities to explain these inconsistencies. First, these studies investigated students from different grade levels. Because children have different needs across developmental stages, the types of activities that are beneficial for older children may not be necessarily important for younger children. Henderson and Mapp (2002) found that some types of parental involvement that are effective for students in middle school are not effective for students in high school (e.g., communicating with the school, volunteering, and attending school events). It is possible that the effects of home-based involvement were washed out when the investigation involved students across grade levels (e.g., Jeynes, 2005). The second possibility is that the measure of child outcomes varies across studies, and the measure of parental involvement was not consistent across literature. Some literature has suggested that various aspect of parental involvement differently affect various developmental and achievement and

behavioral outcomes (Hill, 2001; Keith, 1991; Lee & Bowen, 2006; McNeal, 1999). To better understand the effects and mechanisms of parental involvement on child development, researcher should conduct systematic investigation of various developmental outcomes.

Different from home-based involvement, the effect of school-based involvement on child outcomes seem to be more consistent across literature. For instance, Lee and Bowen (2006) found that school-based involvement (e. g., volunteer, visit school, parent-teacher conference) was positively associated with a group of 3rd to 5th grade students' overall achievement among White, Black, and Hispanic. Desimone (1999) reported positive association between parent volunteering, fundraising, and parent-teacher organization (PTO) involvement and 8th graders' achievement (mathematics, reading, and grades) among White, Black, and Hispanic families. Hill (2001) also showed positive associations between school-based involvement (e.g., visit school, volunteer), and kindergartners' math scores among White, and Black. The positive effect of school-based involvement can be explained by several mechanisms. First, it is possible that children are more motivated to learn when they see their parents' devote their time in their schooling (e.g., modeling hypothesis). Second, when parents are more involved in educational process in school settings (e.g., observation, parent-teacher conferences), they are more likely to gain tools to assist their children learn (e.g., direct instruction hypothesis). Lastly, according to social capital theory, school-based involvement is a source of gaining and obtaining social capital (relationships and social networks). As Lee and Bowen (2006) argue "the cultural disadvantage experienced by racial/ethnic minority parents in relation to school-based involvement appears to occur through barriers faced by these parents in regard to being present at school rather than through accrual of fewer benefits when they are able to be present at school (p. 212)."

From the above discussion, it is evident that various elements of parental involvement (e.g., school-based, home-based) may differentially affect various aspects of child developmental outcomes across racial/ethnic groups. The causal mechanisms may vary. They might be a contagion effect whereby children see and model their parents' positive view of school (Hoover-Dempsey & Sandler, 1995). They might entail the reactive hypothesis because parental involvement may occur in response to poor performance. They might reflect the concepts of social and cultural capital that the forms of parental involvement (habitus) vary across racial groups; thus, the lower achievement may be a result of lower levels of involvement (Coleman, 1988). They may also reflect the hypothesis of cultural capital that different racial/ethnic groups may have different capability to access or exercise social capital (Lareau, 2001). As a result, the effects of parental involvement are not equally distributed to racial/ethnic groups.

In Chapter 3, the links between multi-facets of parental involvement and a wide array of child readiness outcomes were examined to further understand how facets of parental involvement affect various child readiness outcomes and growth during early transition. The hypothetical model is presented first, followed by the introduction of hypotheses and research questions, methodology, results, discussions, and implications as well as future work.

3.0 STUDY 1: PARENTAL INVOLVEMENT AND CHILD COGNITIVE AND SOCIAL-EMOTIONAL READINESS AND GROWTH DURING EARLY TRANSITION: DOES RACE/ETHNICITY MATTER?

3.1 PURPOSE OF THE STUDY

The main purpose of this study was to investigate the within- and between- racial/ethnic group variations in relation to the effects of multifaceted parental involvement, at home as well as in school, on an array of child readiness outcomes during early transition (see Figure 2). The goal was to understand the differences and similarities in terms of the proposed pathways within- and between- four racial/ethnic groups in Head Start programs – White, Black, English-speaking Hispanic, and Spanish-speaking Hispanic. It is important to note that the Spanish-speaking Hispanic group may speak little English, but their levels of English proficiency may not be good enough to be interviewed in English. Of note, this was the same organizational framework used in the FACES study which is the basis for this data analysis.

3.2 THE HYPOTHETICAL MODEL

Figure 2 shows the simplified, hypothetical model that explains the associations between parental involvement and child readiness and growth during early transition. It was hypothesized

that the multifaceted parental involvement would be associated with child cognitive and social-emotional outcomes within each racial group; however, the magnitude of the effects may be different between racial/ethnic groups due to the differences in habitus of parental involvement as well as existing inequality in access to cultural and social capital across racial/ethnic groups. In addition, much previous work has focused on children's academic and cognitive achievement. This study filled this gap by investigating both child cognitive and social-emotional outcomes.

Because the effects of parental involvement on child outcomes may differ depending on the domain of the outcomes (Drummond & Stipek, 2004; Fan & Chen, 2001; Keith, et al., 1998), this study examined five important child readiness domains: vocabulary, literacy skills, early mathematics, classroom social skills, and problem behaviors (U.S. Department of Education, 1994). Each child outcome variable was examined separately. Finally, because parents who are involved in their children's early education are likely to continue to be involved longitudinally (Izzo, et al., 1999), it is possible that some types of parental involvement may be associated with children's growth over time (Fan, 2001; Hong & Ho, 2005). The investigation of the link between parental involvement and child growth is also critical in that it addresses the issues of selection bias in relation to the effectiveness of parental involvement. That is, if the most competent parents with developmentally advanced children are more likely to be involved in school, the effects of parental involvement may be overestimated. In contrast, if parents of the most developmentally at-risk children are more likely to be involved, the effect of parental involvement is likely to be underestimated. One approach to address these biases is to conduct the analyses linking levels of parental involvement to changes in child readiness outcomes (Allison, 1990).

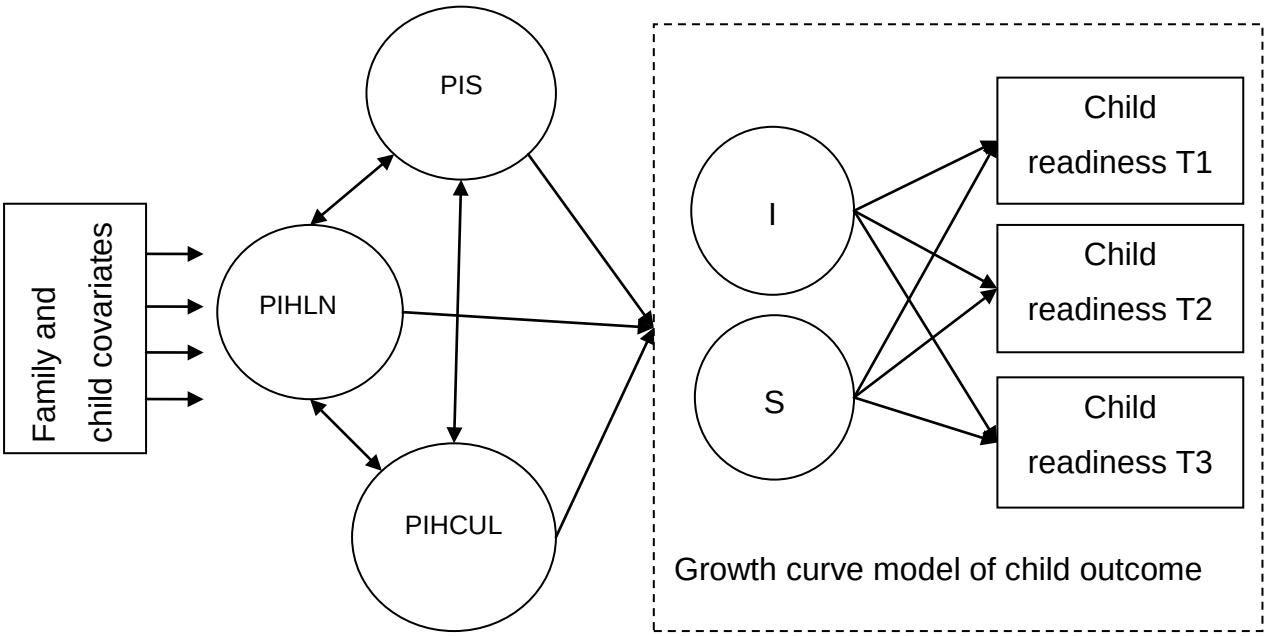


Figure 2. The latent growth curve model of multifaceted parental involvement and child cognitive and social-emotional readiness and growth during early transition. Family and child covariates are (a) number of family risk factors, (b) child age of entry, (c) child emergent literacy skills upon Head Start entry, (d) child social skills upon Head Start entry, and (e) child problem behaviors upon Head Start entry. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities; I = intercept; S = linear slope. Child readiness outcomes were measured in a consecutive three years of follow-up: spring 1998 (T1), spring 1999 (T2), and spring 2000 (T3).

Two main research questions were investigated. First, did parents from different racial/ethnic groups demonstrate different levels of involvement in different types of parental involvement, including PIS, PIHCUL, and PIHLN? The results for this question would lend support to the social capital and cultural capital theory that families vary in terms of educational habitus in parental involvement. Second, what were the differences and similarities between racial/ethnic groups in terms of the proposed pathways? It was hypothesized that social capital, in the form of various types of parental involvement, has an independent effect on child readiness and growth during early transition. In addition, cultural capital, the goodness-of-fit between one's own habitus and the field (ECE standards), may magnify the effect of parental involvement on child outcomes (Lareau, 2001). Therefore, findings that the types of involvement exhibited by non-minority group (e.g., white) are more strongly associated with children's developmental outcome than those preferred by minority groups would lend support to cultural capital.

Much of the research examining the effects of parental involvement has confounded race with family socioeconomic status (SES) and child characteristics (Arnold, et al., 2008; Desimone, 1999; Eccles & Harold, 1996; Fan, 2001). Therefore, to avoid under- or over-estimating the effects of parental involvement, several family and child covariates are entered in the model for the purpose of control, including family income-to-needs ratio, maternal employment status, parental education, child age of assessment, and child prior competence in emergent literacy and problem behaviors upon Head Start entry.

3.3 METHODS

3.3.1 Selection criteria

The FACES 1997 Cohort involved a sample of approximately 3,200 three-, four-, and five-year-old children and their families in 40 nationally representative Head Start programs (see Zill et al., 2001). The 40 participating programs were selected from a universe of 1,734 Head Start programs that operated during the 1995-1996 program year in the U.S. Such large sample size allows researchers to examine group differences. The selected programs were stratified on geographic region (Northeast, South, Midwest, West), community type (urban, rural), and proportion of minority families in the program (above or below 50%). The available Head Start programs served approximately 785,000 ethnically diverse children aged 3 and older. In the FACES design, the sampling procedure was involved with multi-stage sampling design (O'Brien, et al., 2002), which allows researchers to overcome the issue of external validity of the findings.

Within the initial sample, 2,983 children and families were successfully interviewed (7% of attrition rate), and 284 children were removed by the FACES team due to the poor data quality. Within this sample, about 73% of children and families (n = 1,968) were followed longitudinally during the period of fall 1997 and spring 2000. This longitudinal dataset was used for the present study. Children who were not followed longitudinally were similar to the children with longitudinal data in several family characteristics, including family income status (i.e., income-to-needs ratio), racial/ethnic minority membership, and language minority families. However, the children without longitudinal data were more likely to be in the households with lower parental education ($p < .05$) and un-employed mothers ($p < .01$). In addition, two exclusion criteria were applied. First, within the longitudinal sample, children who either were in Head Start before fall

1997 (n = 130) or repeated kindergarten before progressing to first grade (n = 105) were excluded because their educational experiences were substantially and meaningfully different. These excluded children had similar characteristics with the remaining sample in turns of family income, parental education, and mother employment status. Second, due to the small sample size, children from the racial/ethnic groups (e.g., Indian American, Asian, multiracial, etc.) other than the White, Black, or Hispanic based on parent report were excluded from the sample.

Final sample included 448 White (29.2%), 631 Black (41.1%), and 456 Hispanic children (29.7%). Among the Hispanic sample, 281 (61.6%) were interviewed by Spanish-speaking interviewers. This group referred to the *Spanish-speaking Hispanic* group. About 99.6% of this sample indicated that Spanish was the primarily language used at home. It is important to note that the parents in this group may speak a little English; however, their English may not be proficient enough upon the time of parent interview in fall 1997; therefore, they requested to being interviewed by Spanish-speaking interviewers. The Hispanic families who were interviewed by English-speaking interviewers (n = 175) were grouped into the *English-speaking Hispanic* group. Seventy-seven percent of this group reported that Spanish was the primary language spoke at home. Different from the Spanish-speaking Hispanic group, parents in the English-speaking Hispanic group may be more confident in their English skills.

For all groups, the majority of primary respondents for parent interview were mothers (90% – 98%). Demographic and child outcomes data by race/ethnicity are presented in Table 2. Group mean differences in turns of effect sizes were calculated by using Cohen's d (Cohen, 1977). On average, White children were in households with higher income-to-needs ratio and higher parental education comparing to children in other groups with the effect sizes ranging

from small to medium. There were higher percentages of the Spanish-speaking Hispanic children living in households with unemployed mothers.

In terms of child characteristics, the Spanish-speaking Hispanic children were older when they received child assessments in spring 1998. In addition, the Spanish-speaking Hispanic children were less likely to be in Head Start for more than one year. According to parent report upon Head Start entry, White children had higher scores in emergent literacy skills and lower scores in problem behaviors as compared to children in other groups. The differences were greater between White and the Spanish-speaking Hispanic children (ES = .35 - .45).

Table 2

Descriptive Statistics of Study Variables

	White		Black			English-speaking Hispanic			Spanish-speaking Hispanic		
Variables	*M*	*SD*	*M*	*SD*	ES	*M*	*SD*	ES	*M*	*SD*	ES
Family and child covariates											
Age of assessment in spring 1998	4.50	.55	4.43	.53	.13	4.50	.50	.00	4.66	.46	-.32
Income-to-needs ratio	1.04	.55	.76	.50	.53	.95	.45	.18	.74	.36	.65
Parental education scale	3.58	.99	3.44	.99	.14	3.21	.91	.39	3.02	1.41	.46
Emergent literacy in fall 1997	2.50	1.34	2.30	1.40	.15	2.03	1.28	.36	1.93	1.18	.45
Problem behaviors in fall 1997	5.74	2.71	5.75	3.34	.00	5.82	3.40	-.02	6.71	2.88	-.35
Mother was employed (%)	55.0		55.9			55.5			38.7		
Child gender (Male, %)	51.4		49.9			42.4			55.6		
Two years in Head Start (%)	57.3		66.0			55.5			40.8		
Parental involvement											
School-based involvement	.87	.40	.74	.43	.31	.81	.43	.14	.81	.40	.14
Home-based involvement in learning activities	1.37	.33	1.36	.37	.02	1.30	.35	.21	1.16	.35	.62
Home-based involvement in cultural activities	1.83	1.25	2.25	1.33	-.33	1.84	1.23	.00	1.85	1.12	-.02
Child outcomes											
Vocabulary in spring 1998	7.65	1.09	6.71	.99	.90	6.82	.92	.82	5.71	1.06	1.80
Vocabulary in spring 1999	8.57	.97	7.68	.96	.92	8.01	.92	.59	6.99	1.11	1.52
Vocabulary in spring 2000	9.43	.80	8.77	.76	.85	9.01	.72	.55	8.21	.89	1.44
Mathematics in spring 1998	8.31	.41	8.03	.48	.63	8.12	.37	.49	7.79	.58	1.04
Mathematics in spring 1999	8.61	.42	8.44	.38	.42	8.55	.32	.16	8.45	.46	.36
Mathematics in spring 2000	9.12	.39	8.93	.36	.51	8.96	.33	.44	9.04	.32	.22
Literacy in spring 1998	7.32	.76	7.12	.74	.27	7.19	.59	.19	7.24	.54	.12
Literacy in spring 1999	7.98	.89	7.87	.77	.13	8.03	.77	-.06	7.94	.59	.05

Literacy in spring 2000	8.80	.53	8.74	.40	.13	8.78	.35	.04	8.70	.41	.21
Social skills in spring 1998	15.91	4.73	16.18	4.37	-.06	16.33	4.76	-.09	16.80	4.45	-.19
Social skills in spring 1999	17.85	4.21	17.60	4.41	-.06	18.24	4.58	-.09	18.60	4.65	-.17
Social skills in spring 2000	18.37	4.61	18.23	4.64	-.03	18.97	4.00	-.14	19.69	4.08	-.39
Problem behavior in spring 1998	5.68	4.94	4.95	4.88	.15	5.02	4.60	.14	4.14	4.33	.33
Problem behavior in spring 1999	4.94	4.48	5.09	5.33	-.03	5.30	5.54	-.07	3.65	4.00	.30
Problem behavior in spring 2000	5.24	5.28	4.95	5.54	.05	3.72	4.39	.31	3.26	4.28	.41

Note. Data reported in this table were weighted. ES was calculated by using Cohen's d, and the White group was the reference group. Vocabulary scores were IRT scores, and divided by a consistent 10. Mathematics and Literacy scores were IRT scores, and divided by a consistent 50.

3.3.2 Protocol

The FACES data collections were conducted by a group of well-trained site visit teams, which were created specifically for each program. These teams were led by site managers who received two days of training regarding the administration of interview instruments. Prior to each subsequent data collection, these site managers received a single day of training. During the data collection period, a site visit team was sent to most programs for a two-week visit to conduct the parent and teacher interviews, child direct assessments, and classroom observations. In the fall and spring of Head Start, children's cognitive and social-emotional competence were assessed individually, and parents and teachers were interviewed one-on-one about characteristics of their households and about children's developmental competence. In most cases, parents were interviewed in spaces arranged at their Head Start centers, although some parents were interviewed at alternative locations, mostly homes. In addition, classroom observations were conducted by FACES staff, and Head Start teachers were interviewed and filled out self-report surveys regarding their demographics, classroom practices, and children's developmental functioning. On average, one large program took four weeks to complete, while one small program required only a one week visit. During subsequent assessments in the spring of kindergarten and spring of first grade, children's cognitive and social-emotional skills were again assessed directly, parents were interviewed, and teachers completed questionnaires about children's competence. After each phase of data collection, completed interviews were quality checked for missing data and coding errors.

3.3.3 Measures

Brief descriptions and reliability statistics for all variables are described below. When appropriate, reliability statistics are first presented for the sample as a whole (α_F) and then for White group (α_W), Black group (α_{AA}), English-speaking Hispanic group (α_{EHIS}), and Spanish-speaking Hispanic group (α_{SHIS}).

3.3.3.1 Dependent variables: child readiness measures At each wave of data collection, including fall 1997, spring 1998, spring 1999, spring 2000, three direct child assessments were collected: vocabulary, literacy skills, and early mathematics. Two child social-emotional outcomes were also collected based on teacher reports: social skills and problem behaviors. For these child outcome variables, test scores estimated from item response theory (IRT) were used (Embreston & Reise, 2000). Because IRT-equated scores are adjusted for different test forms and difficulty levels, IRT scores are the ideal outcome measures for use in modeling longitudinal growth. For children who were not proficient in English, Spanish-language versions were used in each data collection period. In fall 1997, a subsample of children, specifically Hispanic children, was tested on these cognitive measures using the Spanish-language versions. As the study progressed, the majority of these children became sufficiently proficient to take the English-language versions. Numbers of children receiving Spanish version assessments over time are reported in Appendix A. However, because the scores of the Spanish-language versions are not comparable to the English-language versions, only the data collected by using the English-language versions were included in the analysis. Therefore, the data that were collected by using the Spanish-language versions were treated as missing data.

Vocabulary. The Peabody Picture Vocabulary Test- 3 (PPVT-III) (Dunn & Dunn, 1997) is a measure of the breadth of the child's receptive vocabulary in Standard English. It measures the child's listening and understanding. This measure includes 12 sets, and each set consists of 12 items (total 144). The Adapted Research Version consists of 4 sets of 12 items each (total of 48 items). Children were asked to select one of four pictures that best shows the meaning of each word. Scores were based on the number of words whose meanings were correctly identified. A child with receptive vocabulary skills can recognize the meaning of a word, but not necessarily use it correctly in a spoken or written expression. The score of PPVT for current samples ranges from 6 to 107. For the analyses, the PPVT scores were rescaled by dividing by a constant 10 so that the variances of the PPVT scores have similar scaling as the variances of other study variables. Based on the FACES report, the internal consistency of the PPVT-III ranges from .92 to .98; test-retest reliability ranges from .88 to .96 (Zill, et al., 2001). The predictive validity was conducted with ECLS-K Reading Scale (r = .42) and ECLS-K General Knowledge Scale (r = .79) at the end of kindergarten year (Zill, et al., 2001).

Literacy. The Woodcock-Johnson- Dictation Test (WJD) (Woodcock & Mather, 1989, 1990) measures children's early literacy skills and alphabet knowledge. Basic items involved tracing letters, drawing lines, writing one's own name, and gauging children's knowledge of letters and of sound-symbol correspondence. This scale consisted of 20 items. The WJD IRT scores for current samples range from 186 to 435. For the analyses, the WJD IRT scores were rescaled by dividing by a constant 50 so that the variances of the WJD IRT scores have similar scaling as the variances of other study variables. Based on the FACES report, the internal consistency of the WJ-D is .77. The test-retest reliability (6-9 month interim period) is .61 (Zill,

et al., 2001). The predictive validity was conducted with ECLS-K Reading Scale (r = .42) and ECLS-K General Knowledge Scale (r = .46) at the end of kindergarten year (Zill, et al., 2001).

Mathematics. The Woodcock-Johnson- Applied Problems (WJAP) (Woodcock & Mather, 1989, 1990) measures children's skill in analyzing and solving practical problems in mathematics. In order to solve the problems, the child must recognize the procedure to be followed and then perform relatively simple counting, addition or subtraction operations. This scale consisted of 30 items. The WJAP IRT scores for current samples range from 186 to 435. For the analyses, the WJAP IRT scores were rescaled by dividing by a constant 50 so that the variances of the WJAP IRT scores have similar scaling as the variances of other study variables. The internal consistency reported in the FACES is .90. The test-retest reliability (6-9 month interim period) is .70. The predictive validity was conducted with ECLS-K Reading Scale (r = .52) and ECLS-K General Knowledge Scale (r = .62) at the end of kindergarten year (Zill, et al., 2001).

Social skills. Children's social skills were measured by using the Cooperative Classroom Behavior scale modified from the Personal Maturity Scale (PMS) (Alexander & Entwisle, 1988) and Social Skills Rating System (SSRS) (Elliott, Gresham, Freeman, & McCloskey, 1988). Teachers answered on 12 items scale and assessed the frequency with which the child engaged in friendly, cooperative, and compliant behavior in class during the past month, such as following teacher's directions, helping to put things away, complimenting classmates, and following rules when playing games. Each item is rated on a 3-point scale (0 =*Never*, 1 = *Sometimes*, 2 = *often*). A summary score is created, ranging 0-24. Higher scores represent better social skills within classroom context. The internal consistency for the 1998 spring assessment (α_F) is .88 (α_W = .88,α_{AA} = .88, α_{EHIS} = .87, α_{SHIS} = .86).

Problem behaviors. Child classroom behaviors were measured by using the Behavior Problem Index scale (BPI; 14 items) modified from the Teacher/Caregiver Report Form (TCR) (Achenbach, 1992) and Child Behavior Rating Scale for Teachers (CBRS-T) (Zill, 1976). The BPI assesses negative child behaviors that are associated with learning problems and later grade retention, disciplinary action, and receipt of special education services (Zill, et al., 2001). The items ask about the frequency of aggressive behavior (e.g., hits, fights with others), hyperactive behavior (e.g., restlessness), and anxious or depressed and withdrawn behavior (e.g., unhappiness). Each item is rated on a 3-point scale (0 = *not true*; 1 = *true*; 2 = *very true or very often*). The summary score ranges from 0-28 is used for analyses with higher scores representing more frequent or severe negative behavior. The internal consistency for the 1998 spring measure (α_F) is .86 (α_W = .87, α_{AA} = .85, α_{EHIS} = .84, α_{SHIS}= .86).

3.3.3.2 Independent variables: parental involvement measures Parental involvement was measured in two primary contexts – the home and the school. Among the home-based involvement, two dimensions were measured – learning activities and cultural activities. These data were reported by parents. The survey items are presented in Appendix B.

School-based involvement. In spring 1998, parents were asked how often (0 = *not at all*, 1 = *once or twice a week*, 2 = *three or more times a week*) they have involved in a list of 14-item school-based activities since the child entered Head Start (e.g., volunteered in classroom, observed classroom for at least 30 minutes, attended workshops, attended Head Start social events). A mean score was created for the analysis. The internal consistency (α_F) is .82 (α_W = .80, α_{AA} = .84, α_{EHIS} = .83, α_{SHIS} = .80).

Home-based involvement in learning activities. In both fall 1997 and spring 1998, parents were asked how often (0 = *not at all*, 1 = *once or twice a week*, 2 = *three or more times a week*)

they had engaged their children in a list of 9-item learning-related activities at home (e.g., told story, counting games, talk about the child's day in Head Start; talk about TV programs) in the last week prior to the interview. The average score of the two time points assessment was used for the analysis. The internal consistency for fall 1997 and spring 1998 (α_F) is .67 (α_W = .65, α_{AA} = .70, α_{EHIS} = .59, α_{SHIS} = .68) and .72 (α_W = .66, α_{AA} = .77, α_{EHIS} = .73, α_{SHIS} = .62), respectively.

Home-based involvement in cultural activities. This variable was measured by 7 yes/no items. In fall 1997 and spring 1998, parents were asked whether family members engaged the child in cultural activities (e.g., visited a library; talked with the child about family history or ethnic heritage; visited an art gallery, museum, or historical site) in the past month prior to the interview. A cumulative variable was created for each time point based on whether the parent or other family member had taken the child to one or more of the seven listed activities. The potential range of the composite score was 0-7. The average score the two time points assessment is used for analyses. Based on this operational definition, this variable was an index of a child's exposure to the variety of cultural activities. However, it is limited because although it measures amount, there is no way of knowing how many times a child experienced each of these activities. Therefore, it was more a measure of variety than amount. Regardless of the limitation, research has found that the number of cultural activities in which parents that parents participate in preschool was significantly associated with children's cognitive readiness outcomes (Beasley, 2002). It is possible that when parents participate in various types of cultural activities, they open more avenues for gaining social capital.

3.3.3.3 Covariates: family and child characteristics Family and child demographic data were collected in fall 1997 and spring 1998 by parent report. Family income-to-needs ratios were calculated by taking into account family size relative to the poverty line in 1997 and 1998. The

means of the ratios were used for the analysis. Mothers reported on their employment status at each time of data collection. When mothers indicated their employment status as part-time or full-time in either fall 1997 or spring 1998, they were considered as employed. A dummy variable was created to indicate mothers' employment status (0 = *unemployed*; 1 = *employed*). Parental education was measured based on the highest degree obtained within the family during fall 1997 and spring 1998: 1 = *8th grade or less*, 2 = *beyond 8th grade, but not high school*, 3 = *high school equivalency (GED),* 4 = *high school graduation*, 5 = *vocational/technical diploma*, 6 = *associate degree*, 7 = *some college (but no degree)*, 8 = *BS degree*, 9 = *some graduate school (but no degree)*, and 10 = *graduate degree (MA, Ph.D.)*.

Child prior competence was measured by two variables. First, child emergent literacy skills was measured by parent report on five yes/no items that describe children's performance on literacy related skills (e.g., recognizing letters, writing their name, and counting). The possible total score ranges from 0-5. Higher scores represent higher emergent literacy skills. Second, child problem behavior was measured by a 12 items scale modified from the Achenbach Child Behavior Checklist (Achenbach, 1992). Parents were asked to rate their children's behavior on 12 items related to temper tantrums, problem concentrating, restlessness, and unhappy and so on. Each item was rated on a 3-point scale (0 = *not true*, 1 = *sometimes or somewhat true*, 2 = *very true or often true*) with higher scores representing more negative behaviors. This scale includes three subscales - aggression, hyperactive, and withdrawn. The overall problem behavior composite was used for the analyses. The possible total score ranges from 0 – 24. The internal consistency (α_F) is .70 (α_W = .68, α_{AA} = .73, α_{EHIS} = .72, α_{SHIS} = .64).

3.4 DATA ANALYSIS

3.4.1 Data preparation

A three-step data preparation process was conducted before analyses were begun. First, due to the nature of longitudinal research design, missing data was expected. The percentages of missing of the study variables are reported in Table 3. The amount of missing data in child cognitive outcomes was noticeable across groups. For instance, the percentage of missing for child vocabulary within the Spanish-speaking Hispanic children ranged from 35% to 47% over time. This pattern is expected because a large portion of the Spanish-speaking Hispanic children received Spanish-version assessments over the course of the study (see Appendix A). In addition, the percentages of missing in Woodcock-Johnson assessments, WJD and WJAP, in spring 1998 were large across racial/ethnic groups, ranging from 27% to 42%. It is possible that some children were too young to receive these tests (O'Brien, et al., 2002). Particularly, the missingness was higher among the Spanish-speaking Hispanic group because there was also a large amount of children receiving Spanish-version assessment in spring 1998. For these cases, the pattern of missing was not at random. Regardless, simply removing participants from the dataset if they had missing data could result in bias. To maximize the representativeness of these samples, missing data were handled by using the maximum-likelihood (ML) methods expectation-maximization (EM) estimation method in the EQS (Jamshidian & Bentler, 1999; Schafer & Olsen, 1998). Recent literature has suggested that ML-EM estimation method is an effective method of handling missing data, especially when the amount of missing is large (Collins, Schafer, & Kam, 2001; Graham, Hofer, & Piccinin, 1994; Yuan & Bentler, 2000). Yet, it should be noted that ML-EM estimation assumes missing pattern classified as missing at

random (MAR). Therefore, the parameter estimates, including the intercepts and slopes, may be biased because the estimations were based on children with valid scores.

Second, to adjust for the differential selection at each sampling stage and the effects of non-response, all variables in the analyses were weighted using a normalized longitudinal weight. The child longitudinal weight was generated for those families in which the same respondent participated over time (CHLGWT0; O'Brien, et al., 2002). This weight adjusted for non-response by multiplying the weight by a program-level factor that accounted for the number of families that had different interview respondents over time or who did not complete the interview due to refusal, an inability to contact the family at the time of the visit, or the inability of the parent to be available to the interviewers during the time of the site visit (O'Brien, et al., 2002).

Finally, because there were more than one target child per classroom, clustering effect is possible. The intra-class correlations (ICCs) for dependent variables – child vocabulary, literacy, math, social skills, and problem behaviors, were calculated and adjusted for child weights. The ICC summarizes the proportion of the total variation that lies between classrooms. A large ICC indicates a good deal of within-classroom homogeneity. A cut-off value of .10 is commonly used to determine whether there is clustering effect. When ICC is smaller than .10, it suggests that there is no clustering effect. The calculations of the ICCs for dependent variables, ranging from .001 to .0001, suggest that there were no clustering effects. Therefore, the individual-level datasets were used for the analyses.

Table 3

Missingness of the Study Variables by Racial/Ethnic groups

Variables	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic		
	Valid	Missing		Valid	Missing		Valid	Missing		Valid	Missing	
	n	*n*	%	*n*	*n*	%	*n*	*n*	%	*n*	*n*	%
Family and child covariates												
Age of assessment in spring 1998	421	27	6%	583	48	8%	163	12	7%	264	17	6%
Income-to-needs ratio	447	1	0%	626	5	1%	175	0	0%	281	0	0%
Mother employment status	435	13	3%	587	44	7%	172	3	2%	275	6	2%
Parental education status	448	0	0%	631	0	0%	175	0	0%	281	0	0%
Emergent literacy in fall 1997	448	0	0%	631	0	0%	175	0	0%	281	0	0%
Social skills in fall 1997	448	0	0%	631	0	0%	175	0	0%	281	0	0%
Problem behaviors in fall 1997	448	0	0%	631	0	0%	175	0	0%	281	0	0%
Parental Involvement												
School-based involvement (PIS)	411	37	8%	582	49	8%	152	23	13%	265	16	6%
Home-based involvement in learning activities (PIHLN)	448	0	0%	631	0	0%	175	0	0%	281	0	0%
Home-based involvement in cultural activities (PIHCUL)	448	0	0%	631	0	0%	175	0	0%	281	0	0%
Child outcomes												
Vocabulary in spring 1998	403	45	10%	567	64	10%	154	21	12%	149	132	47%
Vocabulary in spring 1999	401	47	10%	530	101	16%	142	33	19%	178	103	37%
Vocabulary in spring 2000	364	84	19%	542	89	14%	143	32	18%	184	97	35%
Mathematics in spring 1998	326	122	27%	432	199	32%	127	48	27%	164	117	42%
Mathematics in spring 1999	406	42	9%	547	84	13%	146	29	17%	180	101	36%
Mathematics in spring 2000	360	88	20%	552	79	13%	149	26	15%	180	101	36%
Literacy in spring 1998	323	125	28%	442	189	30%	125	50	29%	167	114	41%

Literacy in spring 1999	393	55	12%	537	94	15%	148	27	15%	182	99	35%
Literacy in spring 2000	357	91	20%	535	96	15%	146	29	17%	177	104	37%
Social skills in spring 1998	423	25	6%	590	41	6%	164	11	6%	273	8	3%
Social skills in spring 1999	377	71	16%	461	170	27%	121	54	31%	198	83	30%
Social skills in spring 2000	307	141	31%	385	246	39%	102	73	42%	163	118	42%
Problem behavior in spring 1998	422	26	6%	581	50	8%	163	12	7%	273	8	3%
Problem behavior in spring 1999	378	70	16%	461	170	27%	121	54	31%	197	84	30%
Problem behavior in spring 2000	307	141	31%	385	246	39%	102	73	42%	163	118	42%

Note. For each outcome variable, children who had missing data across all three time points of assessments were removed from the analyses.

3.4.2 Analytic plan

The proposed hypothetical latent growth curve model was estimated using EQS 6.1 structural equation modeling software (Bentler, 2001). Multigroup analyses were used to determine the extent to which a model was consistent across different groups of subjects, and constraints were imposed to determine the consistency of a model across groups and over time (Byrne, 2006). Using this approach allows a test of whether the hypothesized common model exists across four racial groups of interest in this study. To conduct multigroup LGM, each group was analyzed one at a time. A three-step procedure was used. The first step was to model the unconditional latent growth models (LGMs) for each child outcome variable for each racial/ethnic group separately. As shown in Figure 3, the disturbance terms, D1 and D2, represent individual differences in intercept and linear growth trajectories, respectively. The Constant variable, V999, was fixed as 1. The Constant variable provides the mechanism by which a covariance structure is transformed into a mean and covariance structure (Byrne, 2006). The arrows leading from the V999 to each of the Intercept and Slope factors represent the average intercept and average linear growth coefficient, respectively. The arrows leading from error terms, E1, E2, ad E3, represent the influence of random measurement error. The covariance between D1 and D2 is assumed in the specification of an LGM model (Byrne, 2006). Finally, all the loadings were fixed. The loadings form Intercept to observed variables, child outcome variable measured at time 1, time 2, and time 3, were fixed into 1.0. Because in the present study each data collection wave was about 1 year apart, the loadings from Slope to observed variables, child outcome variable measured at time 1, time 2, and time 3, were fixed into 0.0, 1.0, and 2.0, respectively.

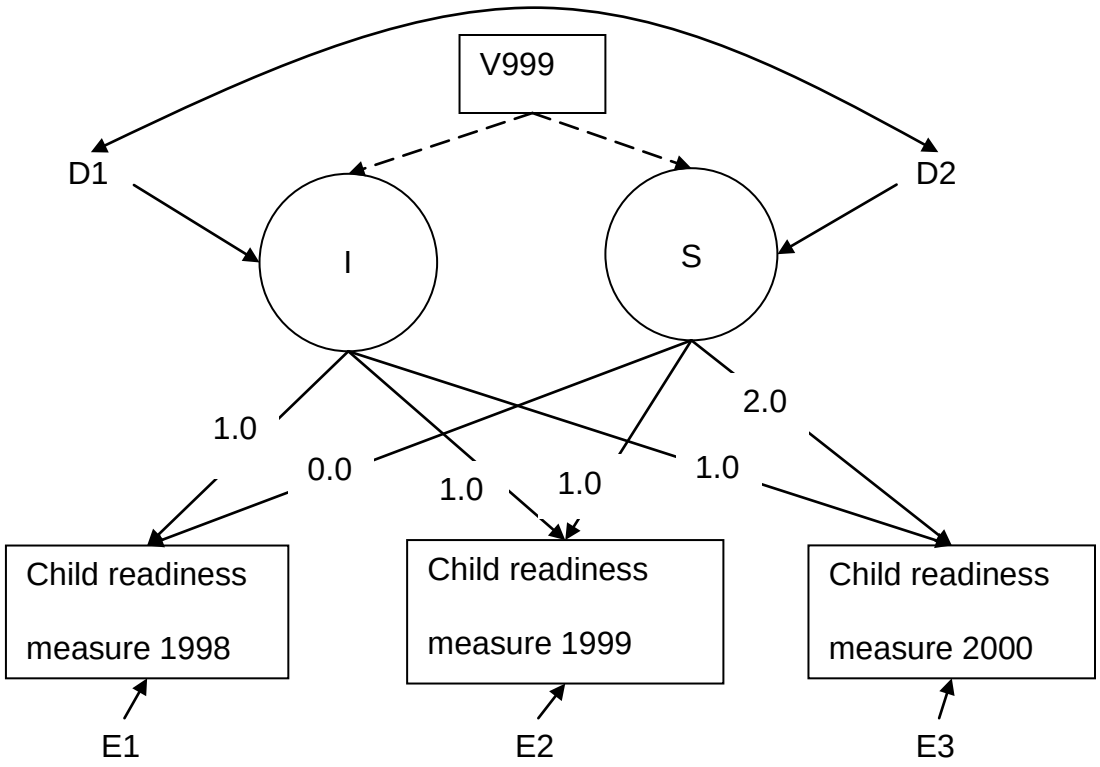


Figure 3. Unconditional latent growth curve model.

The second step was to model the conditional LGMs for each child outcome variable and each racial group separately. It is important to note that this step was continued only when there was statistically significant variability in individual growth (D2). When there was no individual variability in slope, a path model explaining the associations between predictors (parental involvement variables) and dependent variables (child outcome at time 1) was examined instead. At each step, model fit indices were used to judge the goodness-of-fit of the model. Several criteria were used in testing for goodness-of-fit between the hypothesized model and the data for each racial group. These included the χ^2 likelihood statistics, the Yuan-Bentler χ^2 (Y-B χ^2, which

is a missing data equivalent of Satorra-Bentler scaled statistic (S-B χ^2) (Satorra & Bentler, 1988), the comparative fit index (CFI) (Bentler, 1990), the root-mean-square-error-of-approximation (RMSEA) (Steiger & Lind, 1980), and the Standardized Root Mean-Square (SRMR).

The Y-B χ^2 serves as a correction for the χ^2 statistics when distributional assumptions are violated. Its computation takes into account the model, the estimation method, and the sample kurtosis values (Bentler, 2005). Bentler (2005) has suggested that in practice, the Mardia's normalized estimate (multivariate kurtosis) values > 5.00 are indicative of data that are non-normally distributed. The Y-B χ^2 has been shown to be the most reliable test statistic for evaluating covariance structure models under various distributions and sample sizes (Hu, Bentler, & Kano, 1990). Given the known dependency of the χ^2 statistic on sample size, coupled with the grounding of covariance structure analysis in large sample theory, it has become customary to base evaluation of model fit on practical indices of fit, such as the CFI, RMSEA, and SRMR. A CFI ranges from 0 to 1. A "good" fit is achieved when CFI is above .95. A CFI valued of .90 has served as the rule of thumb lower limit cut-point of acceptable fit. Computation of the CFI* is based on Y-B χ^2 values rather than on uncorrected χ^2 values. The value of CFI* is used when it is appropriate. Unlike CFI, RMSEA measures how poor the model is. The range of RMESA is from 0 to 1, and better fit is shown by a smaller value. Values of RMSEA of .05 indicate close fit, values in the vicinity of .08 indicate fair fit, and values of .10 and larger indicate poor fit (Browne & Cudeck, 1993). Like CFI*, the calculation of RMSEA* is based on Y-B χ^2 values. The value of RMSEA* is used when it is appropriate. Lastly, SRMR is the standardized difference between the observed covariance and predicted covariance. A value of zero indicates perfect fit; in a well-fitting model, this value is small (e.g., < .08) (Byrne, 2006). This measure

tends to be smaller as sample size increases and as the number of parameters in the model increases.

When model fit indices indicate the poor fit of the model, the Lagrange Multiplier (LM) and Wald tests (Chou & Bentler, 1990, 2002) were conducted to determine whether or not a parameter should be added or removed in order to improve the fitness of the model. The LM test examines all parameters that have been fixed at zero (i.e., those that are not in the model) and test whether or not these parameters should be added (freed). On the other hand, the Wald test examines all parameters that are currently free and test whether or not these parameters should be deleted or fixed to zero. Each test reports what effect it has on the χ^2 of a model if a parameter were to be deleted or added. Because the order in which constraints are imposed on a model can influence the outcome of subsequent tests, it is important that researchers use a model-testing strategy based on carefully developed substantive considerations.

Lastly, after identifying the best fitting model for each racial/ethnic group, multigroup analyses were used to determine the extent to which a model was statistically different between racial groups. This requirement is called metric invariance. The test of metric invariance can be conducted by constraining the factor loadings to be equal across groups because the loadings carry the information about the relationships between observed variables (Byrne, 2006). This approach allows a test of whether the hypothesized common model exists across racial groups of interest in this study. The process involves establishing (a) baseline models, and (b) structural invariance models. To build a baseline model, the parameters estimated in the path model for each group are combined and tested. It should be noted that the chi-square statistic and its degrees of freedom are additive, the sum of the chi-squares reflects the extent to which the underlying structure fits the data across groups (Byrne, 2006). To test for the structural

invariance across racial groups, the same parameters estimated in the baseline model are constrained to be equal and again estimated. For this research, the invariance of factor loadings is of interest. Therefore, in testing for factor-loading invariance, equality constraints were placed on all those factor loading that were freely estimated. Because the structural invariance model is nested within the baseline model, a chi-square difference test was performed to determine whether structural invariance was supported. When necessary (e.g., when data is non-normal), ΔY-B χ^2 was calculated. Following the test of structural invariance, LaGrange Multiplier Test (LM test) was conducted to evaluate whether each pair of factor loadings was different across groups. This analysis provides a test of the hypothesis that the two parameters are equal in the population.

It is important to note that although chi-square difference test is widely used to compare the fit of nested models, one should not rely exclusively on the chi-square difference test as it suffers from the same well-known problems as the chi-square test for evaluating overall model fit (Byrne, 2006). Thus, CFI and RMSEA were also considered. For this research, pairwise group comparisons were conducted for three racial pairs: White versus Black, White versus English-speaking Hispanic, and White versus Spanish-speaking Hispanic. Therefore, a total of three baseline models and three structural invariance models for each child outcome variable were tested. Again, at each step, the selected model fit indices described earlier were used to judge the goodness-of-fit of the models. Chi-square statistics were calculated to determine whether structural invariance was supported.

3.5 RESULTS

Correlation matrices of the study variables for each racial/ethnic group are presented in Appendix C. Descriptive statistics of parental involvement (see Table 2) revealed that parents from different racial/ethnic groups demonstrated different levels of involvement in various facets of parental involvement. As compared to parents of children of color, White parents reported significantly higher levels of involvement in school activities (ES = .14 - .30) and home-based involvement in learning activities (ES = .02 - .62). Yet, across all groups, Black parents reported exposing their children to a wider variety of cultural activities within home and communities than did other groups (ES = .32 - .33).

With regard to child outcomes, White children demonstrated higher levels of cognitive skills than did children of color after one year of Head Start participation in vocabulary (ES = .82 – 1.80), literacy (ES = .12 - .27), and mathematics (ES = .49 – 1.04). Nevertheless, the gaps in cognitive outcomes persisted over the course of three years of follow-up. With regard to child social-emotional outcomes, in contrast, children in the minority groups, especially the Spanish-speaking Hispanic sample, were rated by their Head Start teachers with higher social competence (ES = -.19 - -.37) and less problem behaviors (ES = .30 - .41) as compared to the White sample. This pattern was consistent over the course of early transition from spring 1998 to spring 2000. These findings suggest that some children from racial/ethnic minority backgrounds may be under-achieved in the cognitive readiness domains; however, they had shown their strengths in the social-emotional domains.

Next, the analysis was begun by estimating unconditional growth curve models and followed by estimating conditional growth curve models. First, fit indices for the unconditional and conditional models are presented in Table 4 and Table 5, respectively. It should be noted that

although some of the RMSEA* values for the unconditional models were not within traditionally acceptable levels (e.g., some were greater than .10), the goodness-of-fit of the conditional models were well within acceptable range. Therefore, the slightly poor RMSEA values for these unconditional models did not pose a serious threat to the fit of the conditional models. However, few exceptions emerged for the final conditional model of literacy skills for the Black, English-speaking Hispanic, and Spanish-speaking Hispanic groups. The goodness-of-fit of the RMSEA* was acceptable for these groups; however, the CFI* was poor regardless of the efforts of model modification. Therefore, interpretation of the results of literacy outcomes should have this limitation in mind.

The unstandardized parameter estimates obtained from the unconditional models are presented in Table 6. The significance of the unstandardized estimates provided evidence for variability in the intercepts and slopes of child outcome variables across all racial/ethnic groups. For child cognitive outcomes, children from all groups grew at a significant rate over time. In most cases, children who started with lower scores gained more longitudinally in all domains of child cognitive outcomes. The patterns of individual rate of change in child social-emotional outcomes were somehow less consistent across racial/ethnic groups. First, there was no variability in the rate of change in social skills among the White and Spanish-speaking Hispanic groups. Second, there was no variability in the slope of child problem behaviors across all racial/ethnic groups. Nevertheless, there was no clear link between the intercept and the slope across all groups. For the groups without significant individual variability in slopes, the path models explaining the link between parental involvement and child outcome in spring 1998 were estimated.

3.5.1 Conditional latent growth models

Complete reports for the conditional models for child vocabulary, math, literacy, social skills, and problem behavior are presented in Appendix D. Across all racial/ethnic groups, the predictions of different types of parental involvement by family and child characteristics were different. The following guidelines were used to determine the size of effect size: R^2 = .02 is small; R^2 = .13 is medium; and R^2 = .26 is large (Kline, 2010). For school-based involvement, the effect size of family and child covariates was medium within the White and English-speaking Hispanic groups (R^2 = .11 - .19), and was small within the Black and Spanish-speaking Hispanic group (R^2 = .05). For home-based involvement in learning activities, the effect size was medium for the Hispanic groups (R^2 = .13 - .15), and was small within the White and Black (R^2 = .05 - .06). In terms of home-based involvement in cultural activities, the effect size was small across all groups (R^2 = .09 - .12).

Specifically, among various family and child factors, child prior competence of emergent literacy skills was the most consistent and positive predictor of parent report of multifaceted parental involvement across all groups. In addition, for most cases, child age of assessment was negatively associated with levels of parental involvement in school and learning activities at home; whereas parental education was positively associated with levels of parental involvement in cultural activities at home across all groups, except the Spanish-speaking Hispanic group. Some differences also merged across different types of parental involvement and racial/ethnic groups. For instance, family income-to-needs ratio was only predictive of school-based involvement among White: White parents with more income sources were more involved in school, B = .09, SE = .04, p < .05. Maternal employment status was negatively associated with school-based involvement among White families, B = -.18, SE = .05, p < .01, and was also

negatively associated with school-based involvement and home-based involvement in learning activities among English-speaking Hispanic families, $B = -.21$, $SE = .08$, $p < .05$, $B = -.11$, $SE = .05$, $p < .05$, respectively. For the Spanish-speaking Hispanic group, other than the emergent literacy skills, child age of assessment was the only significant predictor of home-based involvement in learning and cultural activities, $B = -.16$, $SE = .06$, $p < .01$, $B = -.47$, $SE = .21$, $p < .05$, respectively.

Family and child covariates were also associated with child outcomes. Among these covariates, child age of assessments and child emergent literacy skills upon Head Start entry were the most consistent predictors of the intercepts of vocabulary, math, and literacy. That is, children who were older had higher scores in cognitive outcome measures, and children who entered programs with higher emergent literacy skills were also more competent in cognitive outcomes. In terms of the predictions of the slopes of vocabulary, child age of assessment was the most consistent predictor across all groups: The older children had lower rate of increase in vocabulary over time. It is probably because these older children had higher scores in vocabulary to begin with. It is also interesting to point out that, within the White sample, maternal employment was positively associated with child cognitive outcomes, although it was a negative predictor of parental involvement in school activities. In other words, low-income White mothers who were employed may have limited time to be involved in school; yet, these mothers may be able to provide other sources of support for their children (e.g., economic security, learning materials at home, motivation) (Huston et al., 2005; Morris, Gennetian, & duncan, 2005).
In relation to the predictions of the slopes of math and literacy, child emergent literacy was the most consistent predictor across all groups: Children with higher emergent literacy skills upon Head Start entry had lower rate of increase over time.

After controlling for family and child covariates, different types of parental involvement were associated with different child readiness outcomes across racial/ethnic groups (see Table 7). For the White group, school-based involvement was positively associated with the individual rate of increase in mathematics. For the Black sample, school-based involvement was negatively associated with child vocabulary and literacy skills; yet, it was positively associated with individual growth in literacy scores during early transition. On the other hand, home-based involvement in cultural activities was positively associated with individual rate of increase in vocabulary for the Black families; whereas home-based involvement in learning activities was negatively associated with individual rate of increase in literacy scores over time. For the English-speaking Hispanic group, home-based involvement in learning activities was negatively associated with the individual rate of increase in math scores over time. Lastly, for the Spanish-speaking Hispanic sample, school-based involvement was positively associated with child vocabulary; however, home-based involvement was negatively associated with individual rate of increase in vocabulary over time. Overall, school-based involvement seemed to have more positive effects on child outcomes across all groups as compared to home-based involvement, except the English-speaking Hispanic group; whereas, the effects of home-based involvement in learning activities were likely to be negative across groups.

In contrast, parental involvement over all was not a strong predictor for child social-emotional outcomes across all groups. Within the Black group, home-based involvement in learning activities was positively associated with problem behaviors; whereas home-based involvement in cultural activities was negatively associated with individual rate of increase in social skills over time.

In summary, across all racial/ethnic groups, the effects size on child vocabulary, math, and literacy were large, R^2 = .33 - .52, R^2 = .34 - .64, R^2 = .58 - .73, respectively. The range of effect size on the slope of child vocabulary, math, and literacy was wider ranging from medium to large, R^2 = .16 - .28, R^2 = . 09 - .30, R^2 = .23 - .49, respectively. In relation to child social-emotional outcomes, the effect size was smaller. For child social skills, the effect size ranged from .10 to .23 for the intercept, and ranged from .06 to .19. For child problem behavior, the effect size ranged from .12 to .25.

3.5.2 Multigroup latent growth models comparisons

After identifying the best fitting conditional models across racial/ethnic groups, the analyses of multigroup pairwise comparisons were conducted. One problem was that the data were not normally distributed. Therefore, Δ Yuan-Bentler χ^2 was calculated to indicate whether structural invariance was supported. RMSEA* and CFI* suggest goodness-of-fit of the baseline models and structural invariance models (see Appendix E). Results show that the structural invariance between groups was not supported. In other words, the tested pathways were moderated by race/ethnicity.

Results of multigroup comparisons are shown in the right-side panel of the Table 7. First, the differences were compared between the White group and minority groups. Overall, findings suggested that, in most cases, the effects of parental involvement were similar between White and others. For instance, although a positive association was found between the school-based involvement and the slope of math within the White group, pairwise comparisons suggested that this pathway was not statistically different between White and others. Nevertheless, several significant associations between parental involvement and child outcomes

were found within the Black and the English-speaking Hispanic groups (see Table 7); however, results of the pairwise comparisons revealed that these pathways were not statistically different from the pathways within the White group.

In some cases, differences in terms of the magnitude of the effects of parental involvement on child outcomes were found. In addition, the magnitude of the effect seemed to be stronger for the minority groups than for the White group. However, because the directions of predictions were not always consistent across the groups, three patterns of relationships merged. First, the positive effect of school-based involvement on child vocabulary was stronger for the Spanish-speaking Hispanic group than for the White group, which means school-based involvement seemed to be more beneficial for the Spanish-speaking Hispanic than for the White group. Second, the negative effect of home-based involvement in learning activities on the slope of vocabulary was stronger for the Spanish-speaking Hispanic group than for the White group. In other words, it seemed to suggest that, within the Spanish-speaking Hispanic group, the more involved parents may have the more competent children; therefore, these children may show lower rate of change over time because they are more competent to begin with. Third, although the effects of school-based involvement on child problem behaviors were not significant when examining the conditional LGMs, results of the pairwise comparisons showed that this pathway was stronger for the Black than for the White group. Similarly, the effect of home-based involvement in cultural activities and child vocabulary was stronger for the Spanish-speaking Hispanic than for the White group.

In summary, the effects of school-based involvement were likely to be different across racial/ethnic groups; whereas the effects of home-based involvement were likely to be similar.

When there was a difference, the effect was likely to be stronger for the minority groups than for the White group; whereas, there was no clear pattern between minority groups.

Table 4

Fit Indices for Unconditional Latent Growth Curve Models by Race/Ethnicity

Model	Y-B χ2 (*df*)	*p*	CFI*	RMSEA*	SRMR
White					
Vocabulary	10.796 (2)	0.005	1.000	0.160	0.097
Mathematics	32.065 (2)	0.000	1.000	0.144	0.086
Literacy	11.240 (2)	0.004	1.000	0.184	0.083
Social skills[a]	8.442 (1)	0.003	1.000	0.130	0.007
Problem behaviors[a]	7.208 (2)	0.027	1.000	0.000	0.010
African-American					
Vocabulary	2.683 (2)	0.261	0.759	0.000	0.002
Mathematics	15.385 (2)	0.000	1.000	0.170	0.077
Literacy	3.386 (2)	0.184	1.000	0.080	0.055
Social skills	3.007 (1)	0.082	1.000	0.057	0.002
Problem behaviors[a]	0.370 (2)	0.831	1.000	0.000	0.015
English-speaking Hispanic					
Vocabulary	3.512 (2)	0.173	1.000	0.021	0.030
Mathematics	5.335 (2)	0.069	1.000	0.211	0.126
Literacy	38.209 (2)	0.000	1.000	0.518	0.162
Social skills	1.727 (1)	0.189	0.999	0.065	0.005
Problem behaviors[a]	6.830 (2)	0.032	0.756	0.193	0.090
Spanish-speaking Hispanic					
Vocabulary	8.662 (2)	0.013	1.000	0.090	0.037
Mathematics	7.399 (2)	0.025	1.000	0.065	0.045
Literacy	2.560 (2)	0.278	1.000	0.104	0.068
Social skills[a]	0.439 (1)	0.508	1.000	0.000	0.001
Problem behaviors[a]	0.800 (2)	0.670	0.995	0.034	0.035

Note. [a]A path model.

Table 5

Fit Indices for Conditional Latent Growth Curve Models by Race/Ethnicity

Model	Y-B χ2 (*df*)	*p*	CFI*	RMSEA*	SRMR
White					
Vocabulary	60.368 (31)	0.001	0.943	0.055	0.034
Mathematics	58.234 (32)	0.003	0.976	0.035	0.034
Literacy	69.657 (31)	0.000	0.913	0.065	0.053
Social skills[a]	10.994 (18)	0.895	1.000	0.000	0.025
Problem behaviors[a]	8.044 (17)	0.966	1.000	0.000	0.022
African-American					
Vocabulary	87.549 (30)	0.000	0.928	0.064	0.039
Mathematics	58.184 (28)	0.001	0.949	0.053	0.033
Literacy	115.356 (27)	0.000	0.857	0.088	0.061
Social skills	19.220 (13)	0.116	0.985	0.032	0.026
Problem behaviors[a]	20.758 (13)	0.078	0.982	0.034	0.027
English-speaking Hispanic					
Vocabulary	60.516 (35)	0.024	0.929	0.081	0.053
Mathematics	39.911 (33)	0.190	0.948	0.061	0.048
Literacy	76.177 (35)	0.000	0.878	0.097	0.078
Social skills	20.939 (21)	0.463	0.997	0.012	0.045
Problem behaviors[a]	21.088 (21)	0.454	0.995	0.016	0.046
Spanish-speaking Hispanic					
Vocabulary	52.182 (32)	0.014	0.946	0.062	0.050
Mathematics	63.549 (33)	0.001	0.876	0.070	0.052
Literacy	74.392 (35)	0.000	0.821	0.079	0.059
Social skills[a]	39.841 (20)	0.005	0.909	0.061	0.050
Problem behaviors[a]	39.876 (20)	0.005	0.912	0.061	0.050

Note. [a]A path model.

Table 6

Unstandardized Estimates of Unconditional Latent Growth Models by Race/Ethnicity

Parameter	White		Black		English-speaking Hispanic		Spanish-speaking Hispanic	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Vocabulary								
Mean of intercept (F1)	7.67**	0.06	6.70**	0.06	6.85**	0.09	5.52**	0.10
Mean of slope (F2)	0.87**	0.02	1.03**	0.02	1.06**	0.03	1.35**	0.03
Variance of intercept (D1)	1.05**	0.12	0.89**	0.09	0.75**	0.12	1.25**	0.17
Variance of slope (D2)	0.13**	0.02	0.09**	0.02	0.10**	0.03	0.16**	0.03
Covariance of D1,D2	-0.22**	0.04	-0.17	0.03	-0.15**	0.05	-0.29**	0.06
Mathematics								
Mean of intercept (F1)	8.27**	0.02	7.97**	0.03	8.08**	0.03	7.76**	0.05
Mean of slope (F2)	0.43**	0.01	0.48**	0.01	0.44**	0.01	0.64**	0.02
Variance of intercept (D1)	0.14**	0.02	0.16**	0.02	0.11**	0.02	0.21**	0.06
Variance of slope (D2)	0.02**	0.00	0.03**	0.01	0.02**	0.01	0.02*	0.01
Covariance of D1,D2	-0.03**	0.01	-0.04**	0.01	-0.02	0.01	-0.05*	0.02
Literacy								
Mean of intercept (F1)	7.22**	0.04	7.02**	0.04	7.14**	0.06	7.19**	0.04
Mean of slope (F2)	0.80**	0.02	0.86**	0.02	0.82**	0.03	0.75**	0.02
Variance of intercept (D1)	0.49**	0.09	0.52**	0.07	0.31**	0.07	0.19**	0.06
Variance of slope (D2)	0.07**	0.02	0.10**	0.02	0.07**	0.02	0.04**	0.02
Covariance of D1,D2	-0.16**	0.04	-0.19**	0.03	-0.11**	0.04	-0.05	0.03
Social skills								
Mean of intercept (F1)	16.17**	0.26	16.28**	0.25	16.41**	0.54	16.86**	0.38
Mean of slope (F2)	1.20**	0.16	0.97**	0.14	1.34**	0.28	1.43**	0.22
Variance of intercept (D1)	8.91**	2.88	9.88**	2.89	19.46**	5.61	9.62	6.83
Variance of slope (D2)	0.84	1.55	3.32*	1.37	5.55*	2.31	0.94	2.68
Covariance of D1,D2	-1.51	1.78	-2.67	1.89	-8.18*	3.23	-3.14	4.12
Problem behaviors								
Mean of intercept (F1)	5.43**	0.25	4.98**	0.30	5.22**	0.46	4.13**	0.30
Mean of slope (F2)	-0.10	0.16	0.08	0.15	-0.63**	0.24	-0.35*	0.15
Variance of intercept (D1)	8.41**	1.46	11.43**	2.53	6.81**	1.83	6.79**	2.48
Variance of slope (D2)	1.98	1.12	0.38	1.32	0.13	2.01	0.52	1.23

Note. *$p < .05$. **$p < .01$

Table 7

Conditional LGMs by Race/Ethnicity and Multigroup Comparisons

			White		*Black*		*English-speaking Hispanic*		*Spanish-speaking Hispanic*		*Comparisons between White and others*
IV	→	DV	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	
PIS											
	→	PPVT-I	0.06	0.13	-0.25*	0.12	0.15	0.21	0.46*	0.23	SHIS > W*
	→	PPVT-S	-0.01	0.07	0.07	0.05	-0.07	0.11	-0.07	0.10	
	→	WJAP-I	-0.08	0.05	-0.08	0.07	0.10	0.07	0.04	0.11	
	→	WJAP-S	0.07*	0.03	0.02	0.04	-0.03	0.04	0.04	0.05	
	→	WJD-I	-0.11	0.10	-0.24*	0.10	-0.08	0.14	-0.01	0.12	
	→	WJD-S	0.09	0.05	0.12*	0.05	0.09	0.08	0.04	0.09	
	→	SSRS-I	-0.84	0.64	-0.41	0.69	1.77	1.06	0.21	0.77	
	→	SSRS-S	-		0.05	0.49	-0.46	0.66	-	-	
	→	PB	-0.49	0.65	0.78	0.73	0.82	0.87	-0.13	0.55	B > W*
PIHLN											
	→	PPVT-I	0.23	0.17	0.08	0.12	-0.23	0.21	0.28	0.31	
	→	PPVT-S	-0.04	0.09	-0.04	0.07	0.10	0.10	-0.22*	0.11	SHIS > W*
	→	WJAP-I	0.06	0.06	-0.03	0.08	-0.18*	0.08	-0.24	0.18	
	→	WJAP-S	-0.05	0.04	-0.02	0.04	0.07	0.05	0.13	0.08	
	→	WJD-I	-0.11	0.12	0.03	0.10	-0.11	0.14	0.07	0.15	
	→	WJD-S	0.00	0.06	-0.10*	0.05	0.03	0.08	-0.15	0.10	
	→	SSRS-I	0.16	0.16	-0.06	0.59	0.19	1.07	0.68	0.83	
	→	SSRS-S	-	-	0.43	0.45	-0.17	0.77	-	-	
	→	PB	0.92	0.72	1.43*	0.68	-1.20	1.11	0.40	0.76	
PIHCUL											
	→	PPVT-I	0.03	0.04	-0.04	0.03	0.03	0.05	-0.10	0.10	SHIS > W*
	→	PPVT-S	-0.01	0.02	0.03*	0.02	0.01	0.03	0.04	0.04	
	→	WJAP-I	0.00	0.02	-0.01	0.02	0.00	0.03	0.02	0.05	

	→	WJAP-S	-0.01	0.01	0.00	0.01	0.00	0.02	-0.03	0.02
	→	WJD-I	-0.04	0.04	-0.04	0.03	0.05	0.04	-0.02	0.06
	→	WJD-S	0.01	0.02	0.02	0.02	-0.02	0.02	0.02	0.03
	→	SSRS-I	-0.20	0.20	0.04	0.19	0.08	0.37	-0.01	0.24
	→	SSRS-S	-	-	-0.44**	0.13	-0.10	0.28	-	-
	→	PB	-0.03	0.20	0.12	0.20	-0.19	0.29	-0.09	0.24

Note. The parameters were unstandardized estimates. A dash means that the parameter was set as 0. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities; I = intercepts; S = slopes; PPVT = Vocabulary; WJAP = mathematics; WJD = literacy; SSRS = social skills; PB = problem behaviors.

*$p < .05$; **$p < .01$.

3.6 DISCUSSIONS

The main purpose of this study was to address the issues of the readiness gap and the myth of fade-out by considering parental involvement as a critical component within the Head Start context. Consistent with previous literature, findings of this research reveal that the readiness gaps between White and racial/ethnic minority groups existed in the measures of vocabulary, literacy, and math. Nevertheless, these gaps persisted over the course of three years of follow-up (Brooks-Gunn, Klebanov, Smith, Duncan, & Lee, 2003; Hindman, 2008; K. A. Magnuson & Waldfogel, 2005). It should be noted that even though the minority groups had lower skills in cognitive domains as compared to the White group, they were rated by their teachers as more socially and emotionally competent.

As hypothesized, parental involvement partially explained the variations in child cognitive and social-emotional readiness and growth during early transition. However, as reported in previous literature (Drummond & Stipek, 2004; Fan & Chen, 2001; Keith, et al., 1998), the predictions were not consistent across different child outcome domains. Some authors argue that the effects of parental involvement are more globally beneficial rather than domain specific (El Nokali, Bachman, & Votruba-Drzal, 2010; Keith, et al., 1998). Therefore, in the discussion that follows, the focus is about how different facets of parental involvement were associated with child outcomes as a whole, as opposed to how parental involvement were associated with each child outcome domain.

Briefly summarizing the findings, school-based involvement emerged as the stronger predictor of child outcome, specifically individual growth in math, for the White group. For the Black group, the effects of different types of parental involvement were less consistent. For the English-speaking Hispanic group, home-based involvement in learning activities was the only,

but negative predictor of children's mathematics scores. For the Spanish-speaking Hispanic group, school-based involvement was positively associated with child vocabulary; in contrast, home-based involvement in learning activities was negatively associated with individual growths in vocabulary. Nevertheless, results of the between-group analyses further suggest that the effects of different facets of parental involvement were not equally distributed to children from different racial/ethnic groups. Yet, the findings partially support the theory of cultural capital. In the following discussion, the theory of social capital and cultural capital as well as alternative explanations are considered to understand the findings of this research.

3.6.1 Effects of school-based involvement

As hypothesized, parents of children from different racial/ethnic groups differ in their habitus of parental involvement across ecological settings, home and school (Lareau, 2001). Consistent with previous literature and the hypothesis of cultural capital (Hill et al., 2004; Lareau, 2001; Lee & Bowen, 2006; Stevenson, et al., 1990), results show that parents of the White group reported higher levels of school-based involvement compared with the minority groups. Although school-based involvement was not associated with child readiness in cognitive and social emotional outcomes, it was associated with individual rate of increase in math scores over time. According to Hoover-Dempsey and Sandler (1995), parental involvement in school may have an influence on student achievement through modeling and reinforcement, which in turn may motivate their child and develop positive attitudes toward schooling. Findings of this study suggest that such influence may not have an immediate impact, yet, it may have a longer-term effect since it may have an indirect effect on children's learning trajectories through changes in children's attitudes toward education or their motivation to learn (Hill, 2001; Hong & Ho, 2005). On the other hand,

the finding that parental involvement in school was only associated with individual growth in math suggests that the more involved parents may be able to obtain more information from school teachers about supporting their child's learning in mathematics. Many parents may already engage their children in activities that promote the development of literacy and vocabulary (e.g., read to child, promote language exchange); thus, school-based involvement may have less impact on these outcomes.

It remains a critical question regarding the lack of associations between school-based involvement and child readiness outcomes. While a majority of previous work suggest positive correlations (Bryant, et al., 2000; Fantuzzo & McWayne, 2002; Fantuzzo, et al., 2000; Ou, 2005; Reynolds, 1992), some authors has not detected significant associations between parental involvement and child cognitive outcomes (Bryant, et al., 2000; Domina, 2005; El Nokali, et al., 2010; Mantzicopoulos, 1997; McNeal, 1999). Some researchers argue that for the White families, unlike children of color, there may be many factors that support achievement and development, rendering school-based involvement less influential as a unique factor (Fantuzzo, et al., 2004; Hill, et al., 2004; Mantzicopoulos, 1997). According to Coleman (1988), school-based involvement is expected to influence children's outcomes via increasing social capital in the forms of social networking, social control, and social resources. It is possible that, within the low-income White families, the uninvolved families did not particularly less social capital regarding child-rearing practices than did the involved families. Instead, the uninvolved families may be more at risk due to family socioeconomic status (e.g., employment status, education, income and etc.), parental mental health, or child characteristics (Hoover-Dempsey & Sandler, 1997). Hence, simply presenting in school meetings or volunteering in classrooms without addressing these issues may provide little support for low-income White children.

In relation to the habitus of parental involvement within the Black communities, this research found that Black parents had the lowest levels of involvement in school across all groups; however, they were actively involved in cultural activities within home and community settings (Doucet, 2008; Gutman & McLoyd, 2000; McKay, Atkins, Hawkins, Brown, & Lynn, 2003). This finding is congruent with the theory of cultural capital that parents of minority groups are more involved in ways that reflect their cultural practices outside of school context (Bourdieu, 1977; Lareau & Horvat, 1999). In addition, some scholars suggest that the lower levels of involvement in school settings and higher levels of involvement in home and communities may be a function of Black parents' attempts to protect their children from factors perceived to be harmful outside the family (e.g., racism) (McKay, et al., 2003). By this perspective, it is not surprising to find that higher levels of involvement in school-settings were negatively associated with Black children's readiness outcomes in the measures of vocabulary and literacy. Previous literature findings negative associations suggest that, for some families, school-based involvement may function as a reactive mechanism (Lee & Bowen, 2006; McNeal, 1999). In other words, Black parents may become involved in school when their children are struggling academically (Gutman & McLoyd, 2000). The negative associations for the vocabulary and literacy skills, unlike math, may also reflect teachers' attempts to prompt more parental involvement in school settings among parents of struggling preschoolers when classroom instruction heavily focuses on early literacy skills (El Nokali, et al., 2010).

It becomes a concern if the function of school-based involvement is problem-based for certain groups, because this facet of involvement is perceived as a critical component of educational reform (Head Start Bureau, 1999; National Center for Early Development and Learning, 2002; National Education Goals Panel, 1999). Several scholars argue that because

perceived or actual discrimination, Black parents may have a greater distrust for schools and may monitor schools rather than collaborate with them (Ferguson, 1998; H. Ho, Gol-Guven, & Bagnato; Lareau, 2003; Ogbu, 1981; Pigott & Cowen, 2000). Therefore, Black parents may respond more often by defending the children's behaviors or questioning the teachers than by collaborating with the teachers. Such defense mechanisms may be perceived as a threat to school teachers (Graue, Kroeger, & Prager, 2001; Lareau & Horvat, 1999). Under such circumstance, the quality and the process of school-based involvement may be less supportive, which, in turn, are less likely to produce the immediate benefits for their children's learning outcomes (Pomerantz, et al., 2007). Regardless, school-based involvement was associated with individual growth in literacy scores during early transition. In other words, for Black families, although the function of school-based involvement may be reactive at the school front, it may function positively at home front. Like White families, Black parents may convey their children the importance of schooling by presenting in school, which, in turn, may indirectly support their children's learning trajectories (Hoover-Dempsey & Sandler, 1995). In addition, as Coleman (1988) claimed, school-based involvement is a means for parents to gain social capital. The involved Black parents may have more extensive information about their child's school climate and school's expectations, which, in turn, may also support their children's learning outcomes longitudinally.

Within the Hispanic families, the only significant association was the link between school-based involvement and vocabulary skills within the Spanish-speaking Hispanic children. For the Spanish-speaking Hispanic children, school-based involvement may be a protect factor in that it may increase parents' awareness of school's expectations and provide parents more information and techniques to support their children's learning at home (López, 2001; López, et

al., 2001). The effect may be stronger for the vocabulary outcomes in that the Spanish-speaking Hispanic children may be more motivated to learn English when they see their parents present in school (Porter DeCusati & Johnson, 2004).

Other than that, school-based involvement, overall, seemed to have limited effects on child outcomes within the Hispanic families regardless of mother's English proficiency. There are few possible explanations. First, previous literature suggests that, as compared to White and Black families, Hispanic families may be eager to help their children learn, but they tend to believe that they are less capable of helping their children and that their help may be less likely to contribute to their children's achievement (Stevenson, et al., 1990). It is possible that Hispanic parents may have strong motivation to help their children as parents in other groups; however, lack of self-efficacy may hinder the potential benefits of school-based involvement. Second, it is assumed school-based involvement is an avenue to gain social capital through acquiring more information and social relations with others (Coleman, 1988). However, because of the limited English proficiency, the Hispanic parents may have hard time to communicate with other parents or teachers who do not speak Spanish. In addition, because this study investigated the naturally occurred parental involvement in school, the quality of the involvement is uncertain. It is very likely that many interactions between teachers and parents happened without the presence of a language interpreter. Under such circumstance, the experiences may be very frustrated for both teachers and parents.

Results of between-group analyses further supported that school-based involvement had differential effects on children from different racial/ethnic backgrounds. However, unlike what is proposed in the cultural capital theory, the effects of school-based involvement were likely to be similar between the White and the minority groups with one exception (see Table 7). This

finding is consistent with Lee and Bowen (2006): Parents of the minority groups, particularly the Spanish-speaking Hispanic groups, may be at disadvantaged due to their encounters of cultural barriers to be present in school rather than the accrual of fewer benefits when they are able to present in school. In other words, children from low-income and racial/ethnic minority background face more multiple family risk factors and cultural barriers; thus, a positive factor, like school-based involvement, may be especially protective. While comparing to differences across the minority groups, findings suggest that school-based involvement may have stronger positive effects for the Spanish-speaking Hispanic group than for the Black group. As aforementioned, such differences may be explained by the different nature of school-based involvement demonstrated by families from different racial/ethnic backgrounds.

3.6.2 Effects of home-based involvement in cultural activities

According to Beasley (2002), home-based involvement in cultural activities may be a unique protective factor for low-income children in that it may be a more age-appropriate way to enhance young children's learning process and outcomes (Beasley, 2002; Freeman, 1996). In the present study, home-based involvement in cultural activities may be the strength of Black families. Across all groups, Black families exposed their children to a wider variety of cultural activities in the community settings, and such practice was positively associated with individual growth in vocabulary over time. When parents take their children to events involving concerts, the zoo, the museum, or sports events, they expose their children to a wide variety of learning contexts (e.g., museum, zoo, library, community settings); thus, children have more opportunities to learn, practice, and exchange vocabularies with parents, siblings, and other family members.

For the White and Hispanic families, home-based involvement in cultural activities was not associated with child outcomes. It should be noted that the measure of home-based involvement in cultural activities in this study is a measure of variety not the frequency. On average, the White and Hispanic families exposed their children to one to two types of cultural activities over the school year. It is uncertain how often they were involved. In addition, parents from different groups were likely to engage in different types of cultural activities (see Table 8). For instance, the White parents were more involved in the activities that are encouraged by school (e.g., go to library). However, within the context of low-income families, the frequency of the library usage may not be sufficient enough to support children's learning outcomes (Waanders, Mendez, & Downer, 2007). For the Hispanic families, parents were more involved in the activities that are cultural oriented (e.g., talk about family heritage; go to community events sponsored by ethnic and religious groups). Although these cultural practices may be the ways that Hispanic families maintain their culture origins within the community settings (Quiocho & Daoud, 2006), this type of involvement did not predict any child readiness outcomes for the Hispanic groups. From the cultural capital theory perspective, it is possible that because the types of cultural activities that Hispanic parents were involved in were less congruent with school goals and less visible to school personnel; as a result, these involvement efforts had no effect on child readiness outcomes (Lareau, 2001). In addition, because the Hispanic families were less involved in school activities, they may have less information about school's expectations of children's behaviors, and they may have fewer skills to enrich their children's learning experiences through involving in these cultural activities.

Another potential explanation may be the language that parents used in the process of involvement. In the current sample, a majority of Hispanic families, about 75% and 98% of

English-speaking Hispanic and Spanish-speaking Hispanic families, respectively, spoke Spanish as primary language at home. It is very likely that these parents used Spanish when they went to library, museum, zoo, and so on. Therefore, their involvement in these cultural activities may have little impact on their children's learning outcomes measured in English language.

Table 8

Percentage of Home-Based Involvement in Cultural Activities in Spring 1998 by Race/Ethnicity

Groups	Library	Concert	Museum	Zoo	Heritage	Religious	Sports
White	37.0	16.7	11.3	14.4	37.4	39.4	31.6
Black	28.1	20.1	13.9	21.5	53.2	60.0	36.5
English-speaking Hispanic	27.3	18.2	13.0	20.1	40.3	40.9	39.0
Spanish-speaking Hispanic	23.4	15.5	10.6	13.6	49.6	50.6	24.5

Note. The unit is percentage.

3.6.3 Effects of home-based involvement in learning activities

Unexpectedly, home-based involvement in learning activities was not associated with any positive immediate child cognitive and social-emotional readiness outcomes across all racial/ethnic groups expect few possible spurious findings within the minority groups. Few previous studies have not detected significant associations between home-based involvement in learning activities and child cognitive development in early childhood settings (Bakker, et al.,

2007; Halle, Kurtz-Costes, & Mahoney, 1997; Lamb-Parker, Boak, Griffin, Ripple, & Peay, 1999; Mantzicopoulos, 1997). It is possible that past findings of positive associations may be confounded with race/ethnicity and socioeconomic status (Fan & Chen, 2001). It is also possible that the previous findings of positive between-child associations may be a result of selection bias. The evidence of within-child negative findings in the current study further supports this possibility. Parents of children with better emergent literacy skills were more involved in learning activities at home. After controlling for child emergent literacy skills, home-based involvement was negatively associated with individual rate of change over time. In other words, parents of the more competent children were more involved; hence, these children were less likely to show changes over time since they were more competent to begin with. These within-child negative findings are supported by previous work that has uncovered negative associations among facets of parental involvement and achievement outcomes (El Nokali, et al., 2010; Sui-Chu & Willms, 1996).

Another possibility of the lack of positive correlations may be explained by *how* low-income parents are involved in these learning activities at home (Brooks-Gunn & Markman, 2005; Cooper & Lindsay, 2000; Darling & Steinberg, 1993; Patrikakou & Weissberg, 1998; Pomerantz, et al., 2007). Darling and Steinberg (1993) argue that the effects of parents' practices on child outcomes are determined by the style with which such practices are used. In other words, theoretically, parental involvement in learning related activities at home may support child development in that it facilitates the continuity in practices and expectations between home and school (Bronfenbrenner, 1977; Epstein, 1995); however, involvement may also interfere with children's learning if parents are ill-equipped to take on the role as teachers (Cooper & Lindsay, 2000; Pomerantz, et al., 2007). Cooper and Lindsey (2000) investigated the associations

between four types of parents' homework help styles, including autonomy support, direct involvement, elimination of distractions, and interference, and student outcomes among a sample of 2nd- to 12th-graders. Results showed that autonomy support was associated with higher standardized test scores, higher class grades, and more homework completed; while direct involvement was associated with lower standardized test scores, and lower class grades. These authors also found that parents from lower socioeconomic backgrounds reported lower levels of autonomy support. It is possible that due to their own lack of skills, limited resources, and stressed environment (Duncan, Brooks-Gunn, & Klebanov, 1994; Linver, et al., 2002; Zigler & Styfco, 2004), these low-income parents in the current study may be involved at home in ways that are less effective to support child outcomes.

Home-based involvement in learning activities in relation to how parents are involved may also vary by race/ethnicity (Brooks-Gunn & Markman, 2005). Previous works have documented that parents from different racial/ethnic backgrounds exhibited different parenting behaviors and practices across racial/ethnic groups (Brooks-Gunn & Markman, 2005; McLoyd & Smith, 2002; Wasserman, Rauh, Brunelli, Garcia-Castro, & Necos, 1990). For instance, one research revealed that Hispanic immigrant parents valued compliance of toddlers more than do other groups (Wasserman, et al., 1990). McLoyd and Smith (2002) found that Black parents were more likely to practice spanking as compared to White parents; however, spanking seems to have less negative consequences for Black than White children. Regardless, it is very likely that parents of these racial/ethnic minority groups may practice these behaviors when they are involved in their children's learning at home. Therefore, the lack of correlations may be clouded by these differential parenting practices in the process of parental involvement within home context. These are definitely critical questions need further investigation.

Additionally, the lack of associations concerns the breadth of the measure of home-based involvement in learning activities. Some scholars argued that parental involvement is more effective when it is subject specific (Sheldon, 2005; Starkey & Klein, 2000). In other words, parents need to be involved in whichever domain they are targeting for improvement. For instance, Starkey and Klein (2000) conducted two separate experimental studies for two racial/ethnic groups within Head Start settings: One was Black families, and the other one was Hispanic families. The studies involved giving classes for mothers and children and loaned math activity kits for use at home. Findings showed that low-income families were willing and able to support children's development in math at home once they were provided with the training to do so. Nevertheless, the width of the measure may also be a concern. In this study, the items that measure parental involvement in learning activities at home are widely used in the literature (Bakker, et al., 2007; Epstein, 1995; Fantuzzo, et al., 2004; McWayne, et al., 2004) and several large scale early childhood education survey studies (National Center for Education Statistics, 2009, 2010; Zill, et al., 2006). However, this scale may not capture *all* of the learning relevant activities that occur in these racially and linguistically diverse children's homes. For instance, literature has found that racial socialization messages (e.g., presence of culturally appropriate toys, pictures, and books) are a routine part of the parenting practices of most Black parents regardless of their socioeconomic backgrounds (Caughy, et al., 2002; Doucet, 2008; Gutman & McLoyd, 2000); yet, this aspect of parenting behaviors were not measured in this study.

3.7 IMPLICATIONS AND FUTURE WORK

The theory of social capital and cultural capital offers a useful framework for a systematic examination of the habitus and effects of different facets of parental involvement among children and families from different racial/ethnic backgrounds. White and minority groups benefited similarly from some types of involvement and differently from others. Overall, findings lend little support to the theory of cultural capital based on the findings of group comparisons between White and other minority groups. Considering the findings of this research in context, there are several significant implications for future research and educational practices for ECE programs serving children and families from low-income minority backgrounds.

First, to better capture the habitus and effects of parental involvement across racial/ethnic groups, it is importance to examine multiple facets of parental involvement across ecological settings. Based on the findings of this research, it is unfair to assume that parents who do not present in school activities are uninvolved in their children's education at home or are unable to provide adequate home learning environment. Educators should move away from this deficit perspective because it devalues the educational involvement demonstrated by parents from racial/ethnic minority groups. Instead, educators should recognize, acknowledge, and validate the various ways in which families participated in children's education within and outside of school contexts in that these activities and practices are meaningful to child development, both cognitively and social-emotionally.

Parental involvement in school settings remains of central importance. Based on the results of this study, existing inequalities in the levels of this facet of involvement are likely to contribute to the readiness gap as well as the fade-out effects. Parents of children from different racial/ethnic backgrounds are likely to face different barriers to involvement; thus, schools

should adapt different strategies for different groups to sharpen the focus of intervention. Findings of this study confirm that parents' English proficiency is a significant barrier to school-based involvement for Spanish-speaking Hispanic families. Previous studies indicate that language accommodations, such as providing a Spanish interpreter in parent-teacher conferences or sending information home in both English and Spanish, are the fundamental components of successful parental involvement programs designed for families from language minority backgrounds (Chrispeels & Rivero, 2000; Quiocho & Daoud, 2006). Schools should also understand that, in addition to psycho-social barriers, low-income Hispanic parents tend to have low sense of shared responsibilities for their young children's education (Quiocho & Daoud, 2006; Wong & Hughes, 2006). Nevertheless, prior research indicates that Hispanic parents tend to express concerns about showing respect to authority figure (Holloway, Rambaud, Fuller, & Eggers-Pierola, 1995); thus, they may not become involved in certain ways for the fear of showing disrespect to teachers.

Future research should investigate the strategies that increase Hispanic parents' understanding of the ECE systems within the U.S. educational system. Empirical studies with older children has indicated what that once schools explicitly define schools' expectations and what involvement entails, Hispanic families are willing and able to meet an expectation of being involved in their children's education (Chrispeels & Gonz, 2004; Chrispeels & Rivero, 2000; Reese & Gallimore, 2000).

Different from Hispanic families, Black families are more likely to experience distrust relationships with school systems due to the legacy of racism as well as unique style of student behaviors (Doucet, 2008; Graue, et al., 2001; Hughes & Kowk, 2007; Lareau & Horvat, 1999; McKay, et al., 2003). This factor may contribute to the lack of positive associations between

school-based involvement and child readiness outcomes among the Black children. This finding is troubling in that it suggests that increasing school-based involvement seems to have limited benefits for Black children.

Future research is needed to further understand how to increase the effectiveness of Arian-American parents' involvement in school settings. It should be noted that this study measured naturally occurred parental involvement behaviors; thus, it is possible that the quality of the involvement or the quality of teacher-parent interaction may confound the effects of school-based involvement on child outcomes (Gutman & McLoyd, 2000; Hughes, et al., 2005). In addition, even though previous research suggests that racial socialization, a common practice within Black families regardless of socio-economic status, has positive effects on students' achievement and school adjustment (Coard, et al., 2004; Gutman & McLoyd, 2000). It is unclear whether such practices (e.g., racism awareness, cultural pride, racism awareness) may compromise the quality of teacher-parent interaction (Graue, et al., 2001; Lareau & Horvat, 1999; McKay, et al., 2003). Further investigation in relation to the mediation and moderation role of teacher-parent interaction quality may add valuable information to parental involvement literature, especially within the Black community.

To increase the effectiveness of facets of parental involvement for *all* children, as aforementioned, *quality* of the involvement, both at home front and school front, makes a difference. In the next research phase, researchers should investigate how *quality* of the involvement, as referred to the "goodness-of-fit" in the cultural capital theory, may moderate or mediate the effects of parental involvement. Few studies have suggested that quality of the home-school relationship is a stronger predictor of young children's school adjustment and achievement than are measures of parental involvement behaviors (Cooper & Lindsay, 2000;

Hughes, et al., 2005; Pomerantz, et al., 2007). If the involved parents have poor interaction or relationships with teachers, the effects of the involvement may be limited and sometimes detrimental. Applying similar concepts in to home-based involvement behaviors, if the involved parents are less skilled, less supportive, and have less positive affect, their involvement may be less effective (Pomerantz, et al., 2007; Reese & Gallimore, 2000), as observed in the current study.

Recent literature has found that teacher reports of quality of teacher-parent relationships as well as teachers' and parents' perceptions of parental involvement differ by race/ethnicity (Hughes, et al., 2005; Wong & Hughes, 2006). Future research should examine the extent to which quality of multi-facets of parental involvement moderate the effects of parental involvement across race/ethnicity. Pomerantz and colleagues' (2007) framework of quality of parental involvement provides a clear concept for future investigation. In terms of implications for teacher practices, teacher education and in-service training are needed to increase teachers' skills and competences to support the effectiveness of parental involvement. For instance, during a school visit or classroom observation, effective teachers may be able to address students' behaviors by giving parents tools, such as modeling developmentally appropriate practices and encouraging parents practicing these skills when they are at home; while ineffective teachers may address student's misbehavior without giving further information to assist these parents managing the behaviors at home.

3.8 LIMITATIONS

Although the present study offers many advantages with its longitudinal design, several limitations should be noted. First, the source of the parental involvement measure was based on parent report. Given the concerns that teacher perceptions of parental involvement may be biased by the social milieu of the parents (e.g., parental education, race/ethnicity, and parental involvement in school settings) (Baker, et al., 1999; López, 2001), future study should consider collecting observational data to better capture the extent of parental involvement across settings. Second, findings from the current study are limited in their generalizability. Given that the FACES data were collected between 1997 and 2000, there is the possibility that the results found may not be relevant to the more recent decade of standards-based education and national assessments within Head Start programs. However, this dataset still have its strength include the breadth of ethnic and geographic diversity embedded in the FACES sample. In addition, ECE programs often include parental involvement as a key program component. However, it is difficult to distinguish the unique contributions of parental involvement to children's developmental gains from program features (e.g., program quality, teacher instructional quality). Future studies should focus more on the features of parental involvement to reduce potential confounding effects from additional intervention factors. It should also be noted that the facets of parental involvement examined in the current study are valued by the ECE systems within the U.S. (Head Start Bureau, 1999; National Association for the Education of Young Children, 1996), these dimensions do not necessary capture *all* types of activities and practices that are developmentally meaningful for *all* children. Future research should develop instruments and measures of parental involvement that are culturally relevant for children and families from different cultural and racial/ethnic backgrounds to improve the focus of intervention strategies

for different groups. Lastly, despite the longitudinal nature of the data set, the model tested in this study does not necessarily represent a causal relationship between parental involvement and child outcomes, nor do the results necessary implicated a directional effect. Hence, implications regarding intervention strategies are made with this limitation in mind.

4.0 STUDY 2: DIRECT AND INDIRECT EFFECTS OF TEACHER AND CLASSROOM CONTEXTUAL FACTORS ON PARENTAL INVOLVEMENT: DOES RACE/ETHNICITY MATTER?

4.1 PURPOSE OF THE STUDY

Parental involvement is significantly associated with child developmental status and progress (Dearing, et al., 2006; Fantuzzo, et al., 2004; Reynolds, et al., 2006). The question of *how* to increase parental involvement becomes critical to practitioners as well as policymakers. According to Coleman (1988), all schools have social capital (e.g., resources, information, and networking) that influences student achievement and parental involvement. However, variation in social capital exists between schools (Coleman, 1988; McBride, et al., 2002), which, in turn, explains why some schools are more capable of supporting student achievement by increasing parental involvement. In addition, because schools tend to hold standards that are more congruent with White, middle- and upper- class families (Knopf & Swick, 2007; Lareau, 2001), the effectiveness of efforts designed to increase student achievement by increasing parental involvement may be limited to families from minority backgrounds.

With these concerns in mind, the main purpose of this second study is to explore the within- and between-group variations regarding the effects of teacher and classroom contextual factors, as proxy measures of classroom social capital, on multiple aspects of parental

involvement within the Head Start framework. It should be noted that, instead of investigating school-level characteristics, this study focused on the effects of classroom-level predictors because classroom is a more proximal context in which parent-teacher interaction occurs within the early care and education classrooms (ECE). Three types of parental involvement that are valued within the Head Start and many other ECE frameworks were examined: *school-based involvement, home-based involvement in learning activities, and home-based involvement in cultural activities.*

In this chapter, the review of literature is presented first. The social capital and cultural capital theory, reviewed in the second chapter, are used to discuss racial/ethnic differences in relation to the effects of classroom contextual factors on parental involvement.

4.2 REVIEW OF THE LITERATURE

4.2.1 Teacher and classroom contextual factors and parental involvement

Classroom quality, for instance, is a proxy for several important aspects of teachers' behaviors and practices. Castro, Bryant, Peisner-Feinberg, and Skinner (2004) reported that a one-point increase in classroom quality, measured by the Early Childhood Environment Rating System (ECERS), was associated with a 3.44 increase in the number of parents who volunteered in Head Start classrooms. Instead of using a global quality measure, Waanders, Mendez, and Downer (2007) examined the specific effect of instructional quality within the Head Start context. They found that when teachers offered more academic-oriented activities for children at school, parents of their students engaged in a greater variety of home-based learning activities

(Waanders, et al., 2007). In an ethnographic study within Head Start programs, Sissel (1997) used the term "capacity" to describe resources and expectations (e.g., including material, informational, cultural, and interpersonal) of an institution by which the quality of interactions between staff and parents are shaped. Sissel revealed that lack of capacity (e.g., lack of parent room, lack of facility cleanliness, and lack of training) was one of the main concerns for teachers when they asked parents to come to school.

Classroom and school climate of parental involvement is also related to individual parental involvement behaviors within school settings (Castro, et al., 2004; Seefeldt, Denton, Galper, & Younoszai, 1998; Stone, 2006). Stone (2006) found that parents of students in schools with higher percentages of volunteering parents were more likely to be involved in school, and these parents were more likely to increase their levels of involvement over the course of school year. A classroom with more involved parents may present a positive climate that empowers parents and provides a sense of comfort for parents to be involved (Arnold, et al., 2008; Overstreet, Devine, Bevans, & Efreom, 2005; Seefeldt, et al., 1998). From the social capital perspective, it is assumed that a classroom with more involved parents provides a set of social networks for parents (Coleman, 1988)**;** individuals in such networks are believed to provide or exchange information and advice to each other to play an active role in their children's education. However, parents of children from racial/ethnic minority backgrounds may have smaller social networks since the limited English proficiency or perceived racism may cause parents to experience a lack of confidence in social situations (Lareau, 2001; McKay, et al., 2003).

Additionally, teachers' instructional experiences are associated with parental involvement behaviors (Arnold, et al., 2008; Bakker, et al., 2007; Carlisle, Stanley, & Kemple, 2006; Rimm-Kaufman & Pianta, 1999). It is possible that experienced teachers may hold different attitudes

toward parental involvement. After interviewing a group of kindergarten and early elementary school teachers, McBride and Lin (1996) found that the experienced teachers perceived that one of the main goals of parental involvement was to learn how the school can better meet the needs of the children and their families. On the contrary, the novice teachers were more likely to focus on how parental involvement can help them as teachers rather than how it could help the parents and their individual children (McBride & Lin, 1996). Nevertheless, the novice teachers in the McBride and Lin's study seem to have a less positive regard for the parents than the experienced teachers (e.g., "All parents can meet their basic obligations if they tried"; "Having parents in the classroom is a lot of work with very little payback"; p. 365).

Teacher education is also related to teachers' implementation of home-school partnerships initiatives (McBride et al., 2002). Over an 18-week period of data collection on the various parental involvement practices in prekindergarten programs, McBride and colleagues (2002) revealed that teacher who received formal training in parental involvement reported a significantly higher proportion of their contacts with parents focused on discussing children's developmental progress with family members as compared to teachers had not received such training in their formal education. In addition, the teachers who had taken a course on parental involvement reported more positive attitudes toward parental involvement than did teachers without such training.

Research indicates that teachers' attitudes of parental involvement have significant implications for teachers' practices to involve parents as well as parents' decisions to be involved in school activities (Bakker, et al., 2007; Grolnick, Benjet, Kurowski, & Apostoleris, 1997; McBride, Bae, & Blatchford, 2003; Peña, 2000; Shivers, Howes, Wishard, & Ritchie, 2004). Stone (2006), for instance, indicated that teachers who held negative beliefs and low

expectations of students were less likely to reach out and were distrustful of parents. McBride, Bae, and Blatchford (2003) revealed that the negative attitudes of staff members were identified by parents as a common institutional barrier for school-based involvement.

Unfortunately, teachers who hold negative views toward parents are common. A national survey indicated that teachers tend to perceive parents as incompetent to help their children (Jones, White, Aeby, & Benson, 1997). In the same study, findings showed that 90% of the teachers responding agreed that parental involvement is vital to having a good school. However, 73% disagreed with the statement that "most parents know how to help their children." These responses indicate that teachers view parents as less competent when it comes to helping children with schoolwork. A more recent large-scale survey with middle- and high-school samples conducted by Redding (2008) revealed similar findings that teachers tend to give themselves high marks, but they are not so positive about the contributions parents make. For instance, about 79% of parents reported that they encourage their children to read for pleasure at home, but only 26% of teachers agreed that parents have done so. These findings are troublesome because if teachers do not appreciate parents' roles in assisting their children, they are not likely to involve parents in the educational process. Nevertheless, these teachers may even consider parents' involvement in classroom activities as aggressive and negative, especially when the expectations of behavioral standards are not communicated between teachers and parents (Carlisle, et al., 2006; Sissel, 1997).

4.2.2 Research gaps

More studies are needed to understand the links between classroom contextual factors and the types of parental involvement activities outside of the school context. For instance, researchers

need to investigate *whether* and *how* classroom contextual factors may have an influence on home-based involvement. One hypothesis which has been proposed within the Head Start framework is that when parents are more involved in program activities (e.g., provide opportunities for volunteering, observations, workshops, job training, and child development courses), they are more likely to learn and demonstrate the types of activities and involvement (e.g., enrich home environment, positive parenting) that is congruent with schools' expectation at home. Therefore, Head Start aims to actively involve parents in school with the hope that parents who are not involved at home will become involved; and parents who are already involved will gain more knowledge to strengthen their skills of involvement outside of school contexts. It is assumed that when a mother is involved in school, she learns and observes more developmentally appropriate practices; she builds relationships with teachers and other parents; she gains information regarding the resources she can use in the communities. The benefits gained through involvement in school are not just limited to school settings. This mother may apply what she learns from school and then embeds these practices into the family's daily activities.

Several Head Start evaluation studies have found some evidence to support this belief. A recent program evaluation research conducted by Chang, Park, Singh, and Sung (2009) with Early Head Start sample revealed that mothers who participated in parenting classes or socialization meetings (school-based involvement) provided more linguistic and cognitive stimulation at home (home-based involvement) as compared to mothers who did not participate in these school activities. In addition, better developmental outcomes were found for children whose mothers had higher levels of involvement in Head Start parent programs and provided more at home linguistic and cognitive simulation. A recent Head Start research report (U.S.

Department of Health and Human Services, 2010), demonstrates that Head Start has a long-lasting impact on parents' child-rearing practices and parent-child relationships till the end of first grade. It is possible that Head Start may exert its long-term influence on child development by involving parents in school-based activities; in turn, parents improve their home environment and practices. It is also possible that the classroom contextual factors that are associated with school-based involvement may also have an indirect effect on home-based involvement through school-based involvement. This study examines this hypothesis.

Recent literature is also limited regarding the effects of school practices on parental involvement across racial/ethnic groups. It is still unclear whether the associations between teacher and classroom contextual factors and parental involvement differ by race/ethnicity. Recent literature recognizes that the mismatch in terms of values, expectations, and behaviors between home and school culture may impede children's optimal development (Epstein, 1995). Hence, classrooms should be a forum for negotiating culture; parents and teachers should work together through two-way communication and installing culturally sensitive services. However, many teachers are still struggling with limited training in working with culturally diverse families and tend to use White, middle- and upper-class standards to judge parents' involvement behaviors (e.g., participation in school activities is the way to show caring) (Baker, 1997; Bernhard, et al., 1998; McGarth, 2007). Nevertheless, as suggested in the cultural capital theory (Lareau, 2001), because of the hidden bias toward White, middle- and upper-class families, school practices may have less influence on racial/ethnic minority parents' involvement practices, which, in turn, may have limited implications for children and families from diverse cultural and racial/ethnic backgrounds. Some related studies seem to support this claim (Garcia Coll, et al., 1996; Johnson, et al., 2003; McNeal, 1999). For instance, Johnson and colleagues (2003) argue

that the traditional measures of ECE program quality may not capture the variance within child care environments that have salience for developmental competence of children of color, such as variation associated with the extent to which child care environments promote a positive racial or ethnic identity (Johnson, et al., 2003). A study investigating children's learning experiences within ECE classrooms found that race/ethnicity predicts a child's likelihood of being involved in enriching activities (Tonyan & Howes, 2003; Wishard, 2003). Grolnick et al. (1997) found that teacher attitude toward parental involvement was more predictive of parental involvement when families experience less at-risk factors. Therefore, whether teachers' attempt to reach and involve those most in need becomes a concern.

4.3 THE HYPOTHETICAL MODEL

The main purpose of this study was to understand the associations between teacher and classroom contextual factors and parental involvement, at home and in school, within- and between- racial/ethnic groups in Head Start programs. A total of four groups were included: White, Black, English-speaking Hispanic, and Spanish-speaking Hispanic.

Figure 4 shows the conceptual model. The teacher and classroom contextual factors represents six classroom-level predictors, including classroom global quality, quality of teacher-child interaction, classroom climate of parental involvement, teacher attitude toward parental involvement, teachers' teaching experiences in Head Start, and teacher education. Three types of parental involvement were investigated: school-based involvement, home-based involvement in learning activities, and home-based involvement in cultural activities. Because the association between school-based involvement and home-based involvement are likely to be bi-directional

(Bryant, et al., 2000), parents' previous involvement at home upon Head Start entry, including learning and cultural activities, were entered into the model for the purpose of control.

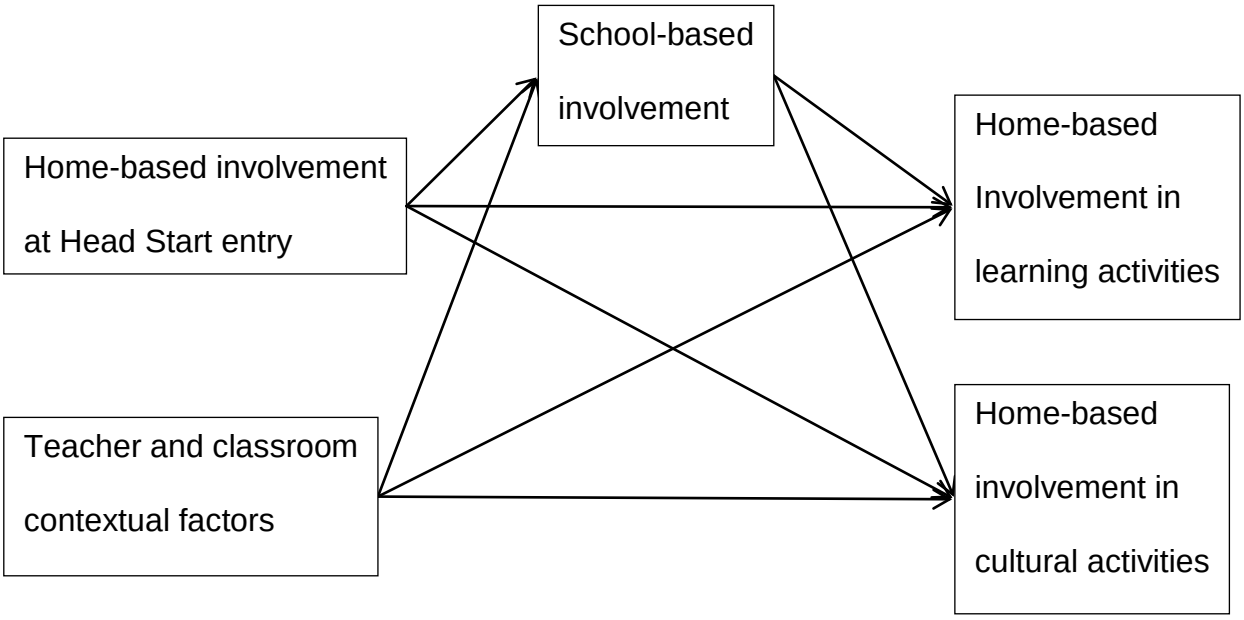


Figure 4. The conceptual path model of the links between classroom-level predictors and parental involvement.

Three research questions were tested. First, what were the key pathways by which Head Start teacher and classroom contextual factors exerted their influence on parental involvement among White, Black, English-speaking Hispanic, and Spanish-speaking Hispanic families? Second, did school-based involvement mediate the pathways of teacher and classroom contextual factors and home-based involvement in learning and cultural activities? Third, what were the

similarities and differences in terms of the estimated pathways across racial/ethnic groups? For the third question, the comparisons were focused on the differences between the White and the other three minority groups. Based on the theory of social capital and cultural capital, findings of the within-group associations between classroom-level attributes and parental involvement behaviors lend support for the theory of social capital; while findings of the between-group variations with regard to the effects of classroom-level predictors on parental involvement, with stronger predictions for the White than for the minority groups, lend support for the theory of cultural capital.

4.4 METHODS

4.4.1 Participants

Data from the FACES 1997 Cohort, during the period of fall 1997 and spring 1998, were used for the analyses. For the purpose of this study, only children who were identified by their primary caregivers as White, Black, English-speaking Hispanic, and Spanish-speaking Hispanic were included. The final sample (n = 1,791) included 29.9% White, 41.5% Black, 10.2% English-speaking Hispanic, and 18.4% Spanish-speaking Hispanic children. Classrooms observations and teacher interviews were both conducted in fall 1997 and spring 1998. After selecting the target children, a total of 478 Head Start classrooms were included in this study. On average, each classroom had three to four target children (ranging from 1 to 15, SD = 2.4). For each racial/ethnic group, the target White group were in the 201 selected Head Start classrooms (ranging from 1 to 12 children per classroom, M = 2.67, SD = 2.06); the target Black children

were in the 231 selected classrooms (ranging from 1 to 15 children per classroom, *M* = 3.22, *SD* = 2.46); the target English-speaking Hispanic children were in the 97 selected classrooms (ranging from 1 to 9 children per classroom, *M* = 1.89, *SD* = 1.58); and the target Spanish-speaking Hispanic children were in the 141 selected classrooms (ranging from 1 to 8 children per classroom, *M* = 2.33, *SD* = 1.65). It is very likely that one classroom may have multiple target children from different racial/ethnic groups.

Child average age of entry in fall 1997 was 49.41 (*SD* = 6.70), 48.78 (*SD* = 6.58), 48.45 (*SD* = 6.14), and 50.79 (*SD* = 5.42) months old for the White, Black, English-speaking Hispanic, and Spanish-speaking Hispanic children, respectively. In terms of home language, 83.1% of English-speaking Hispanic children and 97.4% of Spanish-speaking Hispanic children spoke Spanish as primary language at home. Overall (see Table 9), within the Head Start in 1997, majority of the teachers were White (45.0%) and female (97.4%). Across all racial/ethnic groups, children were likely to be taught by teachers from the same racial/ethnic backgrounds. In addition, children were likely to be taught by teachers with different experiences and trainings. For instance, the Spanish-speaking Hispanic children were likely to be taught by teachers without early childhood education major; White children were more likely to be taught by teachers without certification; the Hispanic children were more likely to be taught by teachers without memberships of early childhood organizations/associations as compared to the other groups. Across all groups, majority of teachers had at least some college training.

Table 9

Descriptive Statistics of Teacher Attributes by Race/Ethnicity

Variables	All	White	Black	English-speaking Hispanic	Spanish-speaking Hispanic
Teacher Demographics					
White	45.0	78.5	24.5	24.0	19.2
Black	29.2	13.1	69.9	21.8	9.4
Hispanic	23.4	7.0	5.3	53.1	63.3
Had ECE major	76.9	76.6	79.1	81.0	67.4
Had certification	77.3	62.3	83.9	82.2	81.1
Member of ECE associations	53.4	60.2	60.1	52.2	41.3
Teaching experiences					
2 or less	11.6	13.9	8.7	14.8	16.4
3-4 years	20.2	16.7	12.2	22.2	24.5
5-9 years	41.1	39.6	40.0	47.7	33.3
10 or more years	27.2	29.8	39.1	15.3	25.8
Teacher education					
GED or less	1.8	2.8	1.3	1.7	0.6
High school Graduation	2.6	2.0	3.6	3.9	0.9
Vocational diploma	4.0	2.4	1.9	9.0	1.9
Associate degree	16.3	13.5	26.0	25.3	20.9
Some college	42.0	33.3	46.3	50.6	37.1
Bachelor's degree	19.6	25.5	11.5	6.2	33.6
Some graduate or more	13.8	20.6	9.4	3.3	4.9

Note. Data were unweighted.

4.4.2 Protocol

The FACES data collections were conducted by a group of well-trained site visit teams, which were created specifically for each program. These teams were led by site managers who received two days of training regarding the administration of interview instruments. Prior to each subsequent data collection, these site managers received a single day of training. During the data collection period, a site visit team was sent to most programs for a two-week visit to conduct the parent and teacher interviews, child direct assessments, and classroom observations. As described in Chapter 3, parents were interviewed in fall 1997 and spring 1998 in relation to their involvement in Head Start programs and their home practices. In terms of classroom-level data, a set of staff interview instrument developed by the FACES team with consultation from ACYF staff and the investigators of the Head Start Quality Research Centers was delivered. Teacher interview covered a wide variety of topics (O'Brien, et al., 2002). Classroom observations were conducted by FACES research team in both fall 1997 and spring 1998.

4.4.3 Measures

Brief descriptions and reliability statistics for all variables are described below. When appropriate, reliability statistics are first presented for the sample as a whole (α_F) and then for White group (α_W), Black group (α_{AA}), English-speaking Hispanic group (α_{EHIS}), and Spanish-speaking Hispanic group (α_{SHIS}).

4.4.3.1 Dependent variables: parental involvement Parents self-reported on the measures of parental involvement in fall 1997 and spring 1998. The survey items are presented in Appendix

B. For each parental involvement measure, when there were more than two missing items, the variable was treated as missing.

School-based involvement. In spring 1998, parents were asked how often (0 = *not at all*, 1 = *once or twice a week*, 2 = *three or more times a week*) they have involved in a list of 14-item school-based activities since the child entered Head Start (e.g., volunteered in classroom, observed classroom for at least 30 minutes, attended workshops, attended Head Start social events). A mean score was created for analysis. The internal consistency (α_F) is .82 (α_W = .79, α_{AA} = .85, α_{EHIS} = .83, α_{SHIS} = .80). On average, parents of the Black group had the lowest levels of involvement in school settings as compared to parents of other groups ($p < .01$).

Home-based involvement in learning activities. During fall 1997 and spring 1998 parent interview, parents were asked how often (0 = *not at all*, 1 = *once or twice a week*, 2 = *three or more times a week*) they had engaged their children in a list of 9-item learning-related activities at home (e.g., told story, counting games, talk about the child's day in Head Start; talk about TV programs) in the last week prior to the interview. A mean score was created for analysis. The internal consistency for fall 1997 and spring 1998 (α_F) is .69 (α_W = .67, α_{AA} =.73, α_{EHIS} = .61, α_{SHIS} = .63) and .72 (α_W = .69, α_{AA} = .76, α_{EHIS} = .76, α_{SHIS} = .61), respectively. The 1998 spring measure was the dependent variable; while the 1997 fall measure was the covariate. In both fall 1997 and spring 1998, parents of the Spanish-speaking Hispanic group had the lowest levels of involvement in learning activities at home as compared to parents of other groups ($p < .001$).

Home-based involvement in cultural activities. This variable was measured by 7 yes/no items. In fall 1998 and spring 1998, parents were asked whether family members engaged the child in cultural activities (e.g., visited a library; talked with the child about family history or ethnic heritage; visited an art gallery, museum, or historical site) in the past month prior to the

interview. A cumulative variable was created based on whether the parent or other family member had taken the child to one or more of the seven listed activities. The potential range of the composite score was 0-7. Based on this operational definition, this variable was an index of a child's exposure to the variety of cultural activities. However, it is limited because although it measures amount, there is no way of knowing how many times a child experienced each of these activities. Therefore, it was more a measure of variety than amount. Regardless of the limitation, research has found that the number of cultural activities in which parents that parents participate in preschool was significantly associated with children's cognitive readiness outcomes (Beasley, 2002). It is possible that teacher and classroom contextual factors may facilitate parents' awareness to be more involved in a wider variety of activities with their children outside of school contexts. Again, the 1998 spring measure was the dependent variable; while the 1997 fall measure was the covariate used for the purpose of control. In fall 1997 and spring 1998, parents of the Black children were involved in a wider variety of cultural activities at home and communities than were parents of the White and Spanish-speaking Hispanic group in the spring of 1998 ($p < .01$).

4.4.3.2 Teacher and classroom contextual factors

Teacher teaching experiences. In spring 1998, teacher working experiences within Head Start programs was reported by lead teachers during the interview. A categorical variable was created to describe teacher teaching experiences (0 = *Less than 1 year*; 1 = *1-2 years*; 2 = *3-4 years*; 3 = *5-9 years*; 4 = *10 or more years*). This variable was treated as an ordinal variable in the analysis. The majority of the Head Start teachers were in programs more than five years (63%).

Teacher education. Lead teacher's education was measured on an educational scale: 1 = *8th grade or less*, 2 = *beyond 8th grade, but not high school*, 3 = *high school equivalency (GED),* 4 = *high school graduation*, 5 = *vocational/technical diploma*, 6 = *associate degree*, 7 = *some college (but no degree)*, 8 = *BS degree*, 9 = *some graduate school (but no degree)*, and 10 = *graduate degree (MA, Ph.D.)*. Higher scores represent higher education. About 68% of teachers had at least some college experience or higher education.

Teacher attitudes toward parental involvement. This measure was modified from the Teachers' Beliefs About Parents Scale (Feldman & Gerstein, 1988). A total of 12 items (e.g., parents have positive attitude; parents feels responsible for education; parents think early education is important) were selected (Appendix F). In spring 1998, lead teachers rated each item on a 4-point scale (1 = *Applies to some parents*, 2 = *Applies to about half of the parents*, 3 = *Applies to most parents*, 4 = *Applies to all parents in my class*). When there were more than two missing items, this variable was treated as missing. The internal consistency (α_F) is .90 (α_W = .90, α_{AA} = .91, α_{EHIS} = .89, α_{SHIS} = .88).

Classroom climate of parental involvement. A classroom with more involved parents presents a positive atmosphere and climate to encourage parental involvement. In spring 1998, lead teachers were asked how much of parents of children in their class participated in HS activities since school started in fall 1997. A total of 12 Head Start activities were asked (e.g., attended an open house, helped with fundraising) (see Appendix F). Lead teachers rated each item on a 4-point scale (1 = *Applies to some parents*, 2 = *Applies to about half of the parents*, 3 = *Applies to most parents*, 4 = *Applies to all parents in my class*). When there were more than two missing items, this variable was treated as missing. The internal consistency (α_F) is .92 (α_W = .91, α_{AA} = .94, α_{EHIS} = .91, α_{SHIS} = .86). There were no group differences in this scale.

Classroom global quality. Early Childhood Environment Rating Scale (ECERS) (Harms, Clifford, & Cryer, 1998) was used to measure the global quality of classrooms. This measure was assessed twice in fall 1997 and spring 1998 by the FACES observers (site managers). The ECERS consists of 37 items measuring a wide variety of quality-related processes occurring in the classroom. Items are rated on a 7-point scale, with the following anchors: (1) inadequate, (3) minimal, (5) good, and (7) excellent. 7 subscales were derived from the ECERS-R. Subscales include: (1) Personal care (5 items; e.g., greeting/departing; toileting), (2) Furnishing (5 items; e.g., for routing care, for learning activities, child related display), (3) Language skills (4 items; e.g., using language, informal use of language), (4) Motor skills (6 items; e.g., space for gross motor), (5) Creativity (7 items; e.g., music/movement, sand/water), (6) Social Skills (6 items; e.g., space to be alone, group time), and (7) Adult mean score (4 items; e.g., teachers' professional growth, adult personal area). An average score of the two times assessments were created for analysis. The internal consistency for fall 1997 and spring 1998 (α_F) is .88 (α_W = .90, α_{AA} = .84, α_{EHIS} = .88, α_{SHIS} = .88) and .90 (α_W = .91, α_{AA} = .92, α_{EHIS} = .87, α_{SHIS} = .88), respectively.

Quality of teacher-child interaction. Arnett Scale Caregiver Behavior is a rating scale of teacher behavior towards the children in the classroom. It consists of 26 items that assess five areas of teacher behavior: sensitivity, punitiveness, detachment, permissiveness, and prosocial interaction. The version of the Arnett Caregiver Interaction Scale utilized in the current round of FACES consists of 30 items and five subscales: Sensitivity (10 items; e.g., "Listens attentively when children speak to her"), Harshness (9 items; e.g., "Speaks with irritation or hostility to the children"), Detachment (4 items; e.g., "Spends considerable time in activity not involving interaction with the children"), Permissiveness (3 items; e.g., "Exercises firmness when

necessary"), and Independence (4 items; e.g., "Assists children in making productive choices"). This measure was assessed twice for both lead teachers and assistant teachers in fall 1997 and spring 1998 by the FACES observers. A composite of these five subscales was created for each assessment. For lead teachers, the internal consistency for 1997 fall and 1998 spring (α_F) is .68 (α_W = .71, α_{AA} = .65, α_{EHIS} = .69, α_{SHIS} = .70) and .65 (α_W = .66, α_{AA} = .67, α_{EHIS} = .65, α_{SHIS} = .61), respectively. For assistant teachers, the internal consistency for 1997 fall and 1998 spring (α_F) is .73 (α_W = .82, α_{AA} = .64, α_{EHIS} = .66, α_{SHIS} = .76) and .72 (α_W = .78, α_{AA} = .70, α_{EHIS} = .67, α_{SHIS} = .65), respectively. An average score of both lead teachers and assistant teachers at two times assessments was used for the analyses. Therefore, the quality of teacher-child interaction in this study refers to the overall quality of interactions between the adults and all students within classrooms rather than the quality of individual teacher toward individual children. A classroom with higher quality of teacher-child interaction suggests that the adults, both lead teacher and assistant teacher, are capable of providing responsive interactions with all students in general. It should be noted that the composite score was rescaled by dividing by a consistent 10 so that the variances of the Arnett scores have similar scaling as the variances of other study variables.

4.5 DATA ANALYSIS

4.5.1 Data preparation

A three-step data preparation process was conducted before analyses were begun. The first step was the management of missing data. The percentages of missing of the study variables are reported in Table 10. The amount of missing data in parental involvement measures ranged from

1% to 10% across racial/ethnic groups. In relation to teacher and classroom measures, the missing data on the classroom climate of parental involvement among the Hispanic groups is noticeable, ranging from 28% - 29%. Interestingly, the missing data on this variable was likely to be in classrooms led by the Hispanic teachers. Although the reason of missing is unknown, it is possible that the missing data was systematic. Therefore, simply removing participants from the dataset if they had missing data could result in bias. To maximize the representativeness of these samples, missing data were handled by using the maximum-likelihood (ML) methods expectation-maximization (EM) estimation method in the EQS (Schafer & Olsen, 1998). Recent literature has suggested that ML-EM estimation method is an effective method of handling missing data, especially when the amount of missing is large (Collins, et al., 2001; Graham, et al., 1994; Yuan & Bentler, 2000). Yet, one limitation of using ML-EM is that it is a better estimation method when the missing pattern is classified as missing at random (MAR). Because the missing pattern for the teacher reports of classroom climate of parental involvement in this study is likely to be missing not at random (MNAR), the parameter estimates (e.g., mean) could be biased.

Second, to ensure that data were representative of the general Head Start population in 1997, data were weighted with the normalized 1997-1998 longitudinal child weights (ADJTRMWT) to adjust for unequal selection probability. The child longitudinal weight was generated for those families in which the same respondent participated over time (O'Brien et al., 2002). This weight adjusted for non-response by multiplying the weight by a program-level factor that accounted for the number of families that had different interview respondents over time or who did not complete the interview due to refusal, an inability to contact the family at the time of the visit, or the inability of the parent to be available to the interviewers during the time of the site visit (O'Brien, et al., 2002).

Finally, because there were more than one target child per classroom, clustering effect is possible. The intra-class correlations (ICCs) for dependent variables - parental involvement variables were calculated and adjusted for child weights. The ICC summarizes the proportion of the total variation that lies between classrooms. A large ICC indicates a good deal of within-classroom homogeneity. A cut-off value of .10 is commonly used to determine whether there is clustering effect. When ICC is smaller than .10, it suggests that there is no clustering effect. Findings suggest that there was no clustering effect in relation to dependent variables across all racial groups, which suggests that multilevel analysis is not necessary. Therefore, individual-level data was used for the analysis. Hence, children who were in the same classroom had the same information in relation to classroom-level data.

Table 10

Missingness of the Study Variables by Racial/Ethnic groups

Variables	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic		
	Valid	Missing		Valid	Missing		Valid	Missing		Valid	Missing	
	n	*n*	%	*n*	*n*	%	*n*	*n*	%	*n*	*n*	%
Home-based involvement in cultural activities 1997	518	18	3%	684	59	8%	180	3	2%	327	2	1%
Home-based involvement in learning activities 1997	517	19	4%	680	63	8%	180	3	2%	327	2	1%
Home-based involvement in cultural activities 1998	507	29	5%	702	41	6%	166	17	9%	312	17	5%
Home-based involvement in learning activities 1998	506	30	6%	698	45	6%	166	17	9%	312	17	5%
School-based involvement	507	29	5%	702	41	6%	166	17	9%	312	17	5%
Teaching Experience	497	39	7%	662	81	11%	176	7	4%	318	11	3%
Teacher Education	505	31	6%	676	67	9%	178	5	3%	321	8	2%
Classroom climate	505	31	6%	677	66	9%	143	40	22%	234	95	29%
Teacher attitude	504	32	6%	677	66	9%	178	5	3%	320	9	3%
Global quality	512	24	4%	740	3	0%	183	0	0%	329	0	0%
Teacher-child interaction	519	17	3%	743	0	0%	183	0	0%	329	0	0%

Note. Data were unweighted.

4.5.2 Analytic plan.

The proposed conceptual model was estimated using EQS 6.1 structural equation modeling software (Bentler, 2001). This model involves the testing of (a) path models, (b) mediation effects, and (c) multigroup analysis. The analytic plan for each test is discussed as follow.

4.5.2.1 Path model The proposed conceptual model was tested for each racial/ethnic group separately. Model fit indices were used to judge the goodness-of-fit of the model. Several criteria were used in testing for goodness-of-fit between the hypothesized model and the data for each racial group. These included the χ^2 likelihood statistics, the Y-B χ^2 scaled statistic (Satorra & Bentler, 1988), the comparative fit index (CFI) (Bentler, 1990), and the root-mean-square-error-of-approximation (RMSEA) (Steiger & Lind, 1980). The Y-B χ^2 serves as a correction for the χ^2 statistics when distributional assumptions are violated. Its computation takes into account the model, the estimation method, and the sample kurtosis values (Bentler, 2005). Bentler (2005) has suggested that in practice, the Mardia's normalized estimate (multivariate kurtosis) values > 5.00 are indicative of data that are non-normally distributed. The Y-B χ^2 has been shown to be the most reliable test statistic for evaluating covariance structure models under various distributions and sample sizes (Hu, et al., 1990).

Given the known dependency of the χ^2 statistic on sample size, coupled with the grounding of covariance structure analysis in large sample theory, it has become customary to base evaluation of model fit on practical indices of fit, such as the CFI and RMSEA. A CFI ranges from 0 to 1. A "good" fit is achieved when CFI is above .95. A CFI valued of .90 has served as the rule of thumb lower limit cut-point of acceptable fit. Computation of the CFI^* is based on Y-B χ^2 values rather than on uncorrected χ^2 values. The value of CFI^* is used when it is

appropriate. Unlike CFI, RMSEA measures how poor the model is. The range of RMESA is from 0 to 1, and better fit is shown by a smaller value. Values of RMSEA of .05 indicate close fit, values in the vicinity of .08 indicate fair fit, and values of .10 and larger indicate poor fit (Browne & Cudeck, 1993). Like CFI*, the calculation of RMSEA* is based on Y-B χ^2 values. The value of RMSEA* is used when it is appropriate. When model fit indices indicate the poor fit of the model, the Lagrange Multiplier (LM) and Wald tests (Chou & Bentler, 1990, 2002) were conducted to determine whether or not a parameter should be added or removed in order to improve the fitness of the model. The LM test examines all parameters that have been fixed at zero (i.e., those that are not in the model) and test whether or not these parameters should be added (freed). On the other hand, the Wald test examines all parameters that are currently free and test whether or not these parameters should be deleted or fixed to zero. Each test reports what effect it has on the χ^2 of a model if a parameter were to be deleted or added. The process of model modification was guided by theoretical meaning.

4.5.2.2 Mediation effects A mediation model is one that seeks to identify the mechanism that underlies an independent variable (X) and a dependent variable (Y) via the inclusion of a third explanatory variable, known as a mediator variable (M). As shown in Figure 5, consider Y that is assumed to affect X. The effect of Y on X may be mediated by M, and the Y may still affect X. Path c is called the total effect and path a, b and c' are called the direct effect. Baron and Kenny (1986) have discussed four steps in establishing mediation. First, the total effect (c) of X on Y has to be significant different from zero. Second, the direct effect of X on M has to be significantly different form zero. Third, the direct effect of M on Y has to be significantly different from zero. Finally, the indirect effect has to be statistically significant. The indirect

effect refers to the amount of mediation, which is defined as the reduction of the effect of the X on Y or c-c' (Baron & Kenny, 1986).

Baron and Kenny (1986) suggested that after all of the steps are met, partial mediation is presented when the direct effect of X on Y, c', is statistically significant after adjusting for M; while complete mediation is presented when c' is not statistically significant after adjusting for M, there is a complete mediation. While it is desired to meet all four steps suggested by Baron and Kenny (1986) to determine mediation, recent literature suggested that the first step (path c) is not necessary because this test may not be significant under certain circumstances (e.g., X is a distal predictor, the presence of suppression effects) (MacKinnon, Krull, & Lockwood, 2000; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Shrout & Bolger, 2002). Keeping this restricted step may result in risking a Type II error of testing the full mediation model (Shrout & Bolger, 2002).

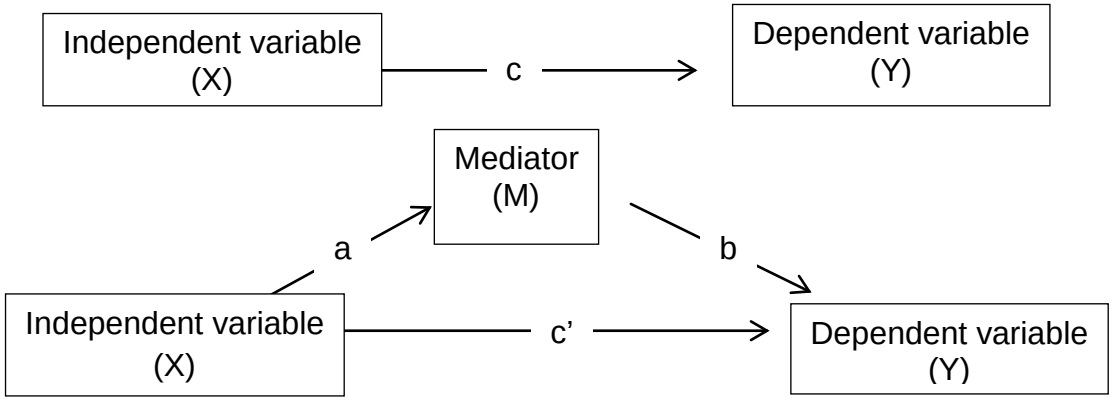


Figure 5. Mediation model.

4.5.2.3 Multigroup Structural Equation Modeling After identifying the best fitting model for each racial/ethnic group, multigroup analyses were used to determine the extent to which a model was statistically different across racial groups. This requirement is called measurement invariance. The test of metric invariance can be conducted by constraining the factor loadings to be equal across groups because the loadings carry the information about the relationships between observed variables (Byrne, 2006). This approach allows a test of whether the hypothesized common model exists across racial groups of interest in this study. The process involves establishing (a) baseline models and (b) structural invariance models.

To build a baseline model, the parameters estimated in the path model for each group were combined and tested. It should be noted that the chi-square statistic and its degrees of freedom are additive, the sum of the chi-squares reflects the extent to which the underlying structure fits the data across groups (Byrne, 2006). To test for the structural invariance across racial groups, the same parameters estimated in the baseline model were constrained to be equal and again estimated. For this research, the invariance of factor loadings is of interest. Therefore, in testing for factor-loading invariance, equality constraints were placed on all those factor loading that were freely estimated. Because the structural invariance model is nested within the baseline model, a chi-square difference test was performed to determine whether structural invariance was supported. When necessary (e.g., when data is non-normal), ΔY-B χ^2 was calculated. Following the test of structural invariance, LaGrange Multiplier Test (LM test) was conducted to evaluate whether each pair of factor loadings was different across groups. This analysis provides a test of the hypothesis that the two parameters are equal in the population. It should be noted that although chi-square difference test is widely used to compare the fit of nested models, one should not rely exclusively on the chi-square difference test as it suffers from

the same well-known problems as the chi-square test for evaluating overall model fit (Byrne, 2006). Thus, CFI* and RMSEA* were also considered. For this research, pairwise group comparisons were conducted to compare the differences between the White group and the minority groups. Therefore, a total of three baseline models and three structural invariance models were tested. Again, at each step, the selected model fit indices described earlier were used to judge the goodness-of-fit of the models. Chi-square statistics were calculated to determine whether structural invariance was supported.

4.6 RESULTS

Correlation matrices of the study variables for each racial/ethnic group are presented in APPENDIX G. Table 11 shows descriptive statistics of the study variables after adjusting for weights. Results of the one-way multivariate analysis of variance (MANOVA) suggest that parents from different racial/ethnic groups demonstrated different levels of involvement in different facets of parental involvement during the period of fall 1997 and spring 1998 ($p < .001$). In fall 1997, parents of the White children reported higher levels of involvement in learning activities at home as compared to parents of children of color ($p < .001$). The difference was greater between parents of White and Spanish-speaking Hispanic children (ES = .66). In spring 1998, parents of the Black children reported higher level of home-based involvement in learning activities as compared to White (ES = .08). The differences between White and Hispanic groups still existed (ES = .10 - .45). In relation to home-based involvement in cultural activities, parents of children of color, especially the Black parents, reported higher levels of involvement than did White parents over time ($p < .001$, ES = .01 - .41). With regard to school-based involvement,

White parents reported higher levels of involvement as compared to other parents ($p < .001$). The difference was greater between White and Black (ES = .74). The analyses of paired sample t-test were also conducted to reveal within-group changes in home-based involvement behaviors over time. Findings indicate that across all racial/ethnic groups, levels of home-based involvement in learning activities and the diversity in home-based involvement in cultural activities were increased during the period of fall 1997 to spring 1998 ($p < .001$). Although effect size were likely to be small, the changes were larger for the Black (ES = .21 - .23) and Spanish-speaking Hispanic groups (ES = .21 - .33).

One-way MANOVA were also conducted to examine between group differences in relation to teacher and classroom contextual factors. On average, the White children were taught by teachers with more education ($p < .001$, ES = .05 - .39) and were in classrooms with higher global quality scores as compared to children of color ($p < .001$, ES = .03-.63). The Black children, on average, were taught by teachers with more years of teaching experiences in Head Start ($p < .001$, ES = .17 - .32) and were in classrooms with more involved parents ($p < .001$, ES = .03 - .11) as compared to other groups. However, among all four racial/ethnic groups, Black children, on average, were also in classrooms with lower scores in global quality and quality of teacher-child interaction measures ($p < .001$, ES = -.48 - -.78). In relation to English-speaking Hispanic children, they were taught by teachers with more positive attitudes toward parental involvement ($p < .001$, ES = .03 - .25); however, they were also taught by teachers with less education in Head Start ($p < .001$, ES = -.11 - -.42) as compared to children in other groups. The Spanish-speaking Hispanic children, on average, were in classroom with more positive teacher-child interactions as compared to children in other groups ($p < .001$, ES = .10 - .78); however, they were taught by teachers who had less positive attitudes toward parental involvement (p

< .001, ES = .18 - .25), and were in classroom with less involved parents (p < .001, ES = -.07 - -.11).

Table 11

Weighted Means and Standard Deviations of the Study Variables by Race/Ethnicity

	White		Black		English-speaking Hispanic		Spanish-speaking Hispanic	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
PIHCUL 1997	1.64	1.34	2.10	1.52	1.83	1.53	1.65	1.15
PIHLN 1997	1.33	.38	1.31	.41	1.29	.37	1.07	.41
PIHCUL 1998	1.83	1.45	2.48	1.69	2.07	1.47	1.92	1.36
PIHLN 1998	1.37	.37	1.40	.42	1.33	.41	1.20	.38
PIS 1998	.84	.39	.74	.43	.79	.43	.79	.40
Teaching Experiences	2.83	.94	2.99	.97	2.67	.91	2.68	.98
Teacher education	7.32	1.50	6.93	1.38	6.79	1.22	7.26	1.00
Classroom climate	2.02	.57	2.04	.69	2.01	.55	1.97	.57
Teacher attitude	2.30	.62	2.28	.73	2.32	.61	2.16	.63
Global quality	5.14	.55	4.81	.50	5.12	.47	5.05	.49
Quality of T-C interaction	7.33	.67	6.73	.97	7.15	.76	7.40	.72

Note. Data were weighted. PIHCUL = home-based involvement in cultural activities; PIHLN = home-based involvement in learning activities; PIS = school-based involvement; T-C = teacher-child.

4.6.1 Path models of classroom-level predictors and parental involvement

The left-side panel of Table 12 shows the unstandardized coefficients and standard errors of the final path model for the White, Black, English-speaking Hispanic, and Spanish-speaking Hispanic group, respectively. Within each group, fit indices, including Y-B χ^2, CFI*, and RMSEA*, indicated good fit between the model and the data. Across all groups, as expected, parents' prior home-based involvement upon Head Start entry was positively associated with their involvement in school activities as well as later involvement in home-based activities. After controlling for prior home-based involvement, parental involvement in school was positively associated with home-based involvement after one year of Head Start participation with one exception within the Spanish-speaking Hispanic sample.

As hypothesized, teacher and classroom contextual factors were associated with parental involvement behaviors, at home as well as in school, among racial/ethnic groups; yet, within each group, certain teacher and classroom contextual factors were more predictive of certain types of parental involvement. For the White sample, after controlling for prior home-based involvement upon Head Start entry, classroom climate of parental involvement and the quality of teacher-child interaction had positive effects on parental involvement in school activities. However, there was a *negative* coefficient between classroom global quality and school-based involvement. When prior levels of home-based involvement was controlled, classroom climate of parental involvement was positively related to home-based involvement in cultural activities; while teacher teaching experience was *negatively* associated with home-based involvement in learning activities. In the case of Black group, teacher and classroom contextual factors had no effects on school-based involvement or home-based involvement in cultural activities; whereas teacher's teaching experiences in Head Start program has positive effect on parental involvement

in learning activities at home. Among the English-speaking Hispanic group, classroom climate of parental involvement was positively associated with parental involvement in school activities. In contrast, the quality of teacher-child interaction was *negatively* associated with parental-involvement in school activities. For this group, teacher and classroom contextual factors were not associated with home-based involvement in cultural or learning activities. About the Spanish-speaking Hispanic group, the quality of teacher-child interaction has positive effect on parental involvement in school activities. In addition, teacher education had positive effects on parental involvement in cultural activities at home.

Overall, this path model accounted for larger portions of the variance in home-based involvement (ranging from 16% to 40%) as compared to school-based involvement (ranging from 11% to 26%) across all racial/ethnic groups. However, it should be noted that, for some groups, the variation in parental involvement was accounted for by the prior levels of home-based involvement rather than the teacher and classroom contextual factors. For instance, for the Black group, the teacher and classroom contextual factor were mostly not associated with school-based involvement as well as home-based involvement in cultural activities. For the English-speaking Hispanic group, teacher and classroom contextual factors were largely not associated with home-based involvement in cultural activities; while these factors were largely not associated with home-based involvement in learning activities for the Spanish-speaking Hispanic group.

4.6.2 Mediation effects

The four steps of Baron and Kenny (1986) were used to determine whether school-based involvement mediated the proposed pathways. The less restrictive approach was used to

determine whether there is a mediation effect (MacKinnon, et al., 2002; Shrout & Bolger, 2002). Table 13 shows the results of mediation effects. In summary, for the White group, school-based involvement partially mediated the effect of classroom global quality and quality of teacher-child interactions on home-based involvement in cultural activities as well as learning activities. In other words, classroom context factors, especially the effect of teacher-child interaction quality, may have an indirect effect on parental involvement practices at home via increasing parental involvement in school. There was no mediation effect found within the Black sample. For the English-speaking Hispanic groups, classroom climate of parental involvement had an indirect effect on parental involvement in learning activities at home via school-based involvement. Lastly, for the Spanish-speaking Hispanic groups, the quality of teacher-child interaction had an indirect effect on home-based involvement in cultural activities via school-based involvement.

4.6.3 Multigroup pairwise comparisons

After identifying the best fitting path model for each racial/ethnic group, the analyses of multigroup pairwise comparisons were conducted. Because the data were not normally distributed, ΔY-B χ^2 was calculated to indicate whether structural invariance was supported. Results show that the structural invariance across racial groups was not supported, which means the pathways were moderated by race/ethnicity. Results of the ΔY-B χ^2, RMSEA* and CFI* suggest good fit of the baseline models and structural invariance models (see Table 14). A snapshot of results of multigroup pairwise comparisons is presented in the right-side panel of Table 12. Results indicate that some teacher and classroom contextual factors had different effects on parental involvement across racial/ethnic groups; while others had similar effects on

parental involvement across racial/ethnic groups. Three patterns of relationships merged from the data.

First, the effects of teacher characteristics on parental involvement behaviors seem to be stronger for the minority groups than for the White group. For instance, the effect of teacher teaching experiences on school-based involvement and the effect of teacher education on home-based involvement in cultural activities were stronger for the Spanish-speaking Hispanic group than for the White group. In addition, the effect of teacher teaching experiences on home-based involvement in learning activities was stronger for the Black sample than for the White sample. One exception was that the effect of teacher education on home-based involvement in learning activities was stronger for the White than for the Black; however, this pathway was not statistically significant across all groups. Second, the effects of classroom contextual factors on school-based involvement were stronger for the White than for the minority groups. For instance, the effect of classroom climate of parental involvement and classroom global quality were stronger particularly for the White than for the Black. In addition, the effect of quality of teacher-child interaction was stronger for the White than for the English-speaking Hispanic group. Yet, the prediction for White was positive, but for English-speaking Hispanic group was negative. Third, the effects of classroom contextual factors on home-based involvement in cultural activities were similar across racial/ethnic groups with one exception. That is, the effect of classroom climate of parental involvement on home-based involvement in cultural activities was stronger for the Spanish-speaking Hispanic group than for the White.

Table 12

Unstandardized coefficients of the Path Models and Multigroup Pairwise Comparisons

	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic[a]			Pairwise comparisons
DV ← IV	*B*	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2	
PIS 1998			14.9%			10.7%			25.8%			13.0%	
← PIHCUL 1997	0.05**	0.02		0.06**	0.02		0.05	0.03		-			W > SHIS*
←PIHLN 1997	0.20**	0.06		0.17**	0.06		0.26*	0.12		0.20**	0.07		
←Teaching experience	-0.03	0.02		-0.02	0.02		0.02	0.04		0.07**	0.03		SHIS > W**
←Teacher education	0.02	0.01		0.00	0.02		0.07	0.04		0.05	0.03		
←Classroom climate	0.10*	0.05		-0.04	0.04		0.29**	0.11		-0.02	0.08		W > B*
←Teacher attitude	0.02	0.05		0.03	0.04		-0.05	0.08		0.02	0.07		
←Global quality	-.158**	0.05		0.07	0.05		0.06	0.09		-0.03	0.06		
←TC interaction	0.14**	0.04		-0.02	0.03		-.107*	0.05		0.09**	0.04		W > EHIS*
PIHCUL 1998			30.3%			35.1%			23.5%			23.3%	
←PIHCUL 1997	0.51**	0.05		0.43**	0.05		0.37**	0.08		0.34**	0.86		
←PIS 1998	0.52**	0.19		1.31**	0.18		0.55*	0.27		1.02**	0.27		B > W**
←Teaching experience	-0.13	0.08		0.06	0.08		0.13	0.11		0.09	0.08		
←Teacher education	-0.01	0.05		0.00	0.06		0.13	0.09		0.17*	0.08		SHIS > W*
←Classroom climate	0.44**	0.15		0.06	0.12		0.00	0.34		-0.38	0.23		W > SHIS**
←Teacher attitude	-0.21	0.15		-0.06	0.13		-0.22	0.21		0.11	0.23		
←Global quality	-0.01	0.14		0.13	0.17		-0.36	0.25		0.34	0.21		
←TC interaction	0.16	0.13		0.07	0.09		-0.04	0.18		-0.15	0.13		
PIHLN 1998			36.1%			32.7%			39.6%			16.2%	
←PIHLN 1998	0.54**	0.05		0.48**	0.05		0.56**	0.09		0.32**	0.07		W > SHIS*
←PIS 1998	0.10**	0.04		0.18**	0.04		0.23**	0.07		0.11	0.07		
←Teaching experience	-.032*	0.02		0.03*	0.02		0.04	0.05		0.02	0.03		B > W**
←Teacher education	0.02	0.01		-0.01	0.01		0.03	0.02		-0.02	0.03		W > B*
←Classroom climate	0.06	0.06		-0.01	0.03		-0.07	0.07		-0.03	0.07		
←Teacher attitude	-0.04	0.05		0.00	0.03		0.02	0.07		0.04	0.06		

←Global quality	0.02	0.04	-0.01	0.05	-.078	0.07	0.01	0.05
←TC interaction	0.02	0.03	-0.03	0.02	-0.03	0.05	0.02	0.04
Fit indices								
SB χ^2 (*df*), *p*	50.426 (23), *p* = .001		70.544 (22), *p* = .000		28.894 (21), *p* = .117		58.550 (18), *p* = .000	
CFI*	0.957		0.942		0.952		0.881	
RMSEA*	0.05		0.059		0.053		0.087	
SRMR	0.044		0.04		0.057		0.049	

Note. This table only shows the pairwise comparisons between White and the other minority groups. The group comparisons between the minority groups were shown in Appendix H. PIHCUL = home-based involvement in cultural activities; PIHLN = home-based involvement in learning activities; PIS = school-based involvement; TC interaction = quality of teacher-child interaction.

[a]The parameter, PIHCUL 1997 → PIS 1998, was removed from the path model to solve the numerical problems.

*p < .05. **p < .01.

Table 13

Tests of Hypothesized Mediation Effects

Path c (total effect)	*B (SE)*	Path a (direct effect)	*B (SE)*	Path b (direct effect)	*B (SE)*	Mediation *B (SE)*
White						
ECERS →PIHCUL 1998	-.10 (.41)	ECERS → PIS 1998	-.16 (.05)**	PIS 1998→PIHCUL1998	.52 (.19)**	-.08 *.04)*
ARNETT→PIHCUL 1998	.23 (.13)[a]	ARNETT → PIS 1997	.14 (.04)**	PIS 1998→PIHCUL1998	.52 (.19)**	.07 (.03)*
ECERS →PIHLN 1998	.00 (.04)	ECERS → PIS 1998	-.16 (.05)**	PIS 1998→PIHLN 1998	.10 (.04)**	-.02 (.01)*
ARNETT→PIHLN 1998	.03 (.03)	ARNETT → PIS 1997	.14 (.04)**	PIS 1998→PIHLN 1998	.10 (.04)**	.01 (.01)*
Black						
N/A						
English-speaking Hispanic						
CLIMATE → PIHLN 1998	-.01 (.08)	CLIMATE → PIS 1998	.29 (.11)**	PIS1998 → PIHLN 1998	.23 (.37)**	.07 (03)*
Spanish-speaking Hispanic						
ARNETT → PIHCUL 1998	-.05 (.11)	ARNETT → PIS 1998	.09 (.04)**	PIS1998 → PIHCUL 1998	1.02 (.27)**	.10 (.04)**

Note. The estimates are unstandardized. PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities; PIS = school-based involvement; ECERS = global quality; ARNETT = quality of teacher-child interactions; CLIMATE = classroom climate of parental involvement.

[a.] p <.10. *p < .05. **p < .01.

Table 14

Pairwise Multigroup Comparisons: Fit Indices of Baseline Models and Structural Invariance Models

	Models	χ^2	Y-B χ^2	df	p	CFI	RMSEA	ΔY-Bχ^2	Δdf	p
W vs. BL	Baseline	111.22	41.25	38	0.330	0.994	0.017			
	Structural invariance	194.00	103.84	62	0.001	0.958	0.037	148.46	24	0.000
W vs. EHIS	Baseline	66.23	25.16	38	0.946	1.000	0.000			
	Structural invariance	143.67	77.84	64	0.115	0.968	0.031	111.25	26	0.000
W vs. SHIS	Baseline	102.75	36.05	34	0.373	0.994	0.018			
	Structural invariance	174.09	89.87	57	0.004	0.948	0.041	121.51	23	0.000

Note. This table only shows the comparisons between the White and the minority groups. The comparisons across the minority groups were shown in Appendix H. W = White, BL = Black, EHIS = English-speaking Hispanic; SHIS = Spanish-speaking Hispanic.

4.7 DISCUSSIONS

This study provides further clarity in documenting the different ways in which Head Start parents are involved in their children's education (Lareau, 2001; Seefeldt, et al., 1998). Consistent with previous work (Stevenson, et al., 1990; U.S. Department of Education, 2006), parents of children from the minority groups had lower levels of involvement in the types of activities that are more congruent with school goals compared with their White counterparts, including school activities and learning activities at home; yet, they were actively involved in a variety of cultural activities outside of school. As hypothesized, teacher and classroom attributes, as proxy measures of social capital owned within a classroom, partially explained the variations in multi-facets of parental involvement behaviors after controlling for parents' prior involvement at home upon Head Start entry.

In summary, among various teacher and classroom attributes, classroom climate and classroom quality indicators emerged as stronger predictors of parental involvement for the White and English-speaking Hispanic groups. For the Black sample, teacher teaching experiences in Head Start was the only significant predictor of parental involvement, particularly in the aspect of home-based involvement in learning activities. For the Spanish-speaking Hispanic group, teacher and classroom attributes both contributed to the variations in parental involvement behaviors within and outside of school.

Group differences regarding the effects of teacher and classroom attributes on parental involvement also emerged; however, the predictions only partially supported the theory of cultural capital. That is, classroom contextual factors, as suggested by cultural capital theory, had stronger effects for the White group than for the minority groups. In contrast with the hypothesis,

teacher attributes had stronger effects for the minority groups than for the White group. For some cases, teacher and classroom attributes had similar effects across groups.

In the following sections, discussions of the effects of teacher attributes are presented first, followed by the discussions of the effects of classroom contextual factors. Within each section, the discussions focus on understanding why and how these factors had similar or differential effects on children and families from different groups. The theory of social capital and cultural capital and other alternative explanations are considered to make sense of the findings.

4.7.1 Effects of teacher attributes

Teachers play a crucial role in fostering and facilitating home-school partnerships (Knopf & Swick, 2007, 2008). When teachers are capable of engaging parents into meaningful involvement, teachers and parents develop mutual understandings with each other and work together toward a common goal – support children's learning and developmental outcomes (Bronfenbrenner, 1977; Epstein, 1995). Teacher education, teacher teaching experiences in Head Start, and teacher attitude of parental involvement are indicators of teacher competency in supporting meaningful parental involvement (Castro, et al., 2004; McBride, et al., 2002; McBride & Lin, 1996; Rimm-Kaufman & Pianta, 1999). As expected, findings of this research reveal that teacher teaching experiences was positively associated with the Black parents' practices in home-based involvement in learning activities and the Spanish-speaking Hispanic parents' behaviors in school-based involvement. Yet, in contrast, teacher teaching experiences was negatively associated with the White parents' engagement in learning activities at home. These findings suggest that teacher's teaching experiences, in general, were associated with

parental involvement; however, it was associated with different facets of parental involvement across racial/ethnic group. One possible explanation is that teachers with more years of teaching experiences may be more aware of the family hardships and cultural barriers that may prevent parents from being involved (McBride & Lin, 1996); thus, experienced teachers may adapt different strategies to involve parents in ways that meet the needs of children and families. On the other hand, it is also possible that parents from different groups may respond differently toward teacher practices (Seefeldt, et al., 1998). The negative association observed among the White sample may suggest that White parents may be more involved at home when they perceived teachers as inexperienced or incompetent.

Teacher education was associated with home-based involvement in cultural activities for the Spanish-speaking Hispanic group. McBride and colleagues (2002) suggest that teachers with more years of formal training tend to have more positive attitudes toward parental involvement, and these teachers are more likely to spend more time on collaborating community resources for families and spend less time on school-based involvement. In addition, the more educated teachers were more likely to have received training or taken courses on home-school partnerships; thus, they may be more equipped to support parental involvement in ways that meet the needs of children and families. McBride and colleagues (2002) found that teachers who had taken one or more courses on parent involvement reported a significantly higher proportion of their contacts with parents focused on discussing children's developmental progress than those teachers who had not taken such a course. Regardless, findings of this research overall suggest that teacher education was largely not associated with parental involvement practices across racial/ethnic groups. One potential explanation is that even though teachers with more education are more likely to receive training in home-school partnerships, research often reveal that such

training is not adequately in teacher preparation programs (McBride, et al., 2002; Young & Hite, 1994). In addition, within the Head Start context, teachers with more education tended to have fewer years of teaching experiences. These more highly educated teachers may have strong training and skills in supporting children's development by providing developmentally appropriate practices to children directly (Burchinal, Cryer, Clifford, & Howes, 2002; Early et al., 2006); however, the higher educated teachers with little experiences in Head Start may be less aware of the challenges as well as cultural realities that low-income families are facing.

Inconsistent with previous work (Jones, et al., 1997; McBride, et al., 2002; Redding, 2009), teacher attitudes of parental involvement were not associated with any form of parental involvement across racial/ethnic groups. One possibility for the lack of association between teacher attitude and parental involvement may be explained by the psycho-social characteristics of the Head Start families. Grolnick and colleagues (1997) revealed that the effects of teacher attitude on parental involvement behaviors are moderated by parental attitude and efficacy. Teacher attitude may be more effective when parental attitude is optimal. However, because Head Start parents are likely to be extremely stressed or distressed by their daily demands, these parents may not perceive teachers' messages even if teachers are attempting to involve them. Another possible explanation is that, within the current samples, teacher attitudes of parental involvement and classroom climate of parental involvement were highly correlated across all groups, ranging from .51 to .71. Hence, the lack of associations may be a result of multicollinearity. When both predictors are estimated simultaneously, classroom climate of parental involvement becomes a stronger predictor of parental involvement in that it is a more proximal predictor of teacher practices to support parental involvement; whereas teacher attitude is a more distal predictor.

4.7.2 Effects of classroom attributes

Based on previous work (Castro, et al., 2004; Gavin & Greenfield, 1998; Ghazvini & Readdick, 1994; Stone, 2006), it was hypothesized that a classroom with more involved parents, more positive teacher-child interactions, and higher global quality presents a welcoming and trusting context that supports parental involvement and home-school partnerships. Parents gain social capital in the form of information, resources, and networking relationships, through involving in this type of classroom. The more social capital they gain, the more likely they will involve in the behaviors that are consistent with school goals (Coleman, 1988). However, one cannot ignore the possibility that inequality exists in the process of gaining social capital. As the proponents of the theory of cultural capital claimed (Lareau, 2001), families and children from racial/ethnic minority groups are more likely to experience disruptions within the classrooms with hidden-bias toward mainstream culture (field). As a result, these minority groups are less likely to gain the social capital as desired. Findings of this research, however, only partially support the theory of cultural capital. For example, some aspects of classroom attributes had stronger effects for the White than for the minority groups, while others had similar effects across groups. Adding even more complexity, the direction of predictions is not consistent across groups. The following discussion focuses on how each aspect of classroom contextual factors are associated with parental involvement across groups, and the alternative explanations are considered.

Classroom climate for parental involvement was positively associated with parental involvement in school activities among the White and English-speaking Hispanic samples. From the social capital perspective, classroom climate for parental involvement presents the richness of social sources, social networking, and social relationships between individual parents (Coleman, 1988). Within the network, parents build connections and develop friendships with

other parents; thus, they may spend their time contacting other parents, informing incoming activities to each other, and repeatedly participating in school events (Coleman, 1988; Stone, 2006). In addition, the benefits of social interactions are not limited within school settings; rather than that, these networking experiences may also expand parents' access and knowledge of community resources, such as where the safe playgrounds are, and what the incoming events are in local libraries and museums. In this study, classroom climate of parental involvement was positively associated with White parents' involvement in cultural activities in the community settings. This finding, in the context of Head Start families, suggests that a classroom with more involved parents may be a protective factor that provides a safety net for participating parents to expand their involvement practices outside of home and school.

However, the positive effect of classroom climate was not equally distributed to children and families from different racial/ethnic groups. First, classroom climate of parental involvement was only associated with school-based involvement but not home-based involvement for the English-speaking Hispanic group. In addition, classroom climate of parental involvement had no effects on any form of parental involvement for the Black and Spanish-speaking Hispanic groups. One potential explanation is that the low-income minority groups are more likely to live in high poverty urban neighborhood in which safety is a main concern that may prevent parents from being involved in activities outside of home (Jarrett, 1999; Leventhal, Fauth, & Brooks-Gunn, 2005; Waanders, et al., 2007). Another possibility is that, even though classroom climate for parental involvement in general supports individual parents' involvement behaviors, the racial/ethnic compositions of the involved parents within classroom context also contribute to individual parent's involvement practices. If, within a classroom, the majority of involved parents are White or from the groups other than their own, parents of minority groups may be

less likely to gain social capital via connecting with "other" parents due to the differences in values, expectations, and beliefs (Lareau, 2001). Based on the finding of this research, this may be more of a concern for the Black group than for the Hispanic groups in that the effect of classroom climate on school-based involvement was weaker for the Black than for the White; whereas the effect was similar between the White and the Hispanic groups. Given the fact that White parents do have higher levels of involvement in school activities (as observed in this study as well as other reports; (Hong & Ho, 2005; U.S. Department of Education, 2006), future research investigating parent-to-parent interaction within classroom contexts is warranted to add our understanding on how social capital, in the form of social network, is transmitted to parents and children form different racial/ethnic groups.

For White families, classroom global quality is negatively associated with parental involvement in school. Seefeldt and colleagues (1998) suggest that parents may become more involved when they perceive school failed to provide a positive environment for their children. In addition, the quality of teacher-child interaction was only directly associated with parental involvement in school settings; however, the direction of prediction was inconsistent across racial/ethnic groups. First, there was a positive association between the quality of teacher-child interaction and parental involvement in school among the White and Spanish-speaking Hispanic group; nevertheless, the effect was similar between these two groups. This finding suggests that, unlike what is proposed in the cultural capital theory, although the Spanish-speaking Hispanic parents are more likely to encounter cultural barriers to involvement, teachers who are warm, sensitive, and responsive to children's needs may also be sensitive to parents' needs, which, in turn, increase parental involvement. Even more encourage, findings of mediation tests suggested that a warm and responsive teacher may be able to increase home-based involvement via

increasing parental involvement in school settings. In contrast, the quality of teacher-child interaction was negatively associated with school-based involvement within the English-speaking Hispanic group. Instead of being more involved, parents of children from the English-speaking Hispanic group were less involved when the quality of teacher-child interaction was perceived as good. Considering this finding in the context of Head Start, this group of parents is likely to experiencing barrier to involvement, such as employment status and unstandardized working hours. It is possible that when parents perceive programs are capable of supporting their children's learning, they may consider their presence in school as unnecessary. From another point of view, the negative association may suggest that the nature of school-based involvement within a classroom that lead by teachers who were not sensitive to children's needs may be problem-focused (Zellman & Perlman, 2006). That is, parents may present in school due to their children's misbehaviors or learning difficulties. Further investigation is warranted to interpret these findings.

4.8 IMPLICATIONS FOR PRACTICES AND FUTURE RESEARCH

The results of this research reveal that teacher and classroom attributes are associated with parental involvement. Head Start should continue to invest in increasing classroom quality and teacher competences to provide a supportive, responsive, and interactive early learning environment for children and families.

However, the inconsistent predictions across racial/ethnic groups suggest that Head Start need to re-evaluate their efforts to support children and families from diverse racial/ethnic backgrounds. First, the teacher attributes seem to have stronger effects on parents of the minority

groups, which suggests that the experienced and more educated teachers may be more aware of the family constraints as well as cultural barriers these minority parents encounter; thus, they may adapt different strategies to involve minority parents in school and at home (Knopf & Swick, 2008; McBride, et al., 2002). Given the concern that teachers tend to have biased views regarding minority parents because these minority groups tend to have lower levels of involvement in school settings (Stevenson, et al., 1990), Head Start may consider providing in-service training for teachers who have not received formal training regarding home-school relations. Also, because teachers with more years of teaching experience in Head Start are more likely to increase parental involvement in school and at home among parents and children from different racial/ethnic backgrounds (Castro, et al., 2004; Grolnick, et al., 1997; McBride & Lin, 1996), it is reasonable to suggest that programs should encourage mentorships between the experienced teachers and novice teachers to increase novice teachers' competences in supporting parental involvement.

Second, classroom attributes had little or no impact on parental involvement in learning activities and cultural activities at home across all racial/ethnic groups. It should be noted that these classroom attributes are also proxy measures of what teachers might have done to support parental involvement within the classroom context; thus, it may not be surprising to find that these attributes were not associated with home-based involvement. McBride, Bae, and Wright (2002) conducted a study collecting data regarding family-school partnership activities over an 18-week period with a group of prekindergarten teachers serving at-risk preschoolers. Data showed that teachers spent a lot of time communicating with parents regarding administrative tasks (44%) (i.e., securing permission slips for an upcoming field trip, informing parents of dates for parent-teacher conferences). These teachers also encouraged parental involvement in learning

and developmental activities with children (20%); however, they pay little attention to the activities that parents can do to support their children's learning at home (7%) and community resources (15%). It is possible that within the Head Start context, parental involvement is supported in a general way and in the "traditional" form (McBride, et al., 2002, p. 121). Post study suggests that general encouragement of parental involvement may not be an effective strategy for increasing parental involvement (Anderson & Minke, 2007; Gavin & Greenfield, 1998); instead, parents are more likely to respond to teachers' encouragement when teachers specifically encourage them to engage in specific involvement activities. Future research is needed to identify the factors that lead teachers to move away from depending on traditional forms of parental involvement to those that facilitate meaningful parental involvement at home, school, and communities.

Third, the classroom attributes are likely to have similar effects on parental involvement in school settings for the White and the Hispanic groups. This finding suggests that although the Hispanic parents are more likely to encounter cultural barriers to involvement (e.g., language barrier, unfamiliarity with school system) (Gallimore & Goldenberg, 2001; López, 2001; Reese & Gallimore, 2000), they can benefit from participating in classrooms with high quality, positive teacher-child interaction, and rich social resources (Becker-Klein, 1999; Castro, et al., 2004; Chrispeels & Rivero, 2000). On the other hand, these findings also suggest that Head Start may need to expend greater efforts to reach out to Hispanic families in that these Hispanic families consistently demonstrated lower levels of involvement at home and in school compared with their White counterparts.

In addition, this study also revealed several negative associations within the White and English-speaking Hispanic groups. The negative associations may suggest that parents from

different racial/ethnic groups may react differently toward school practices. That is, one should not ignore the fact that parents are active participants in their children's education. Influenced by one's own culture norm (habitus), parents may select and choose to involve in the types of activities that they believe are beneficial for their children under their current family circumstance (Hoover-Dempsey & Sandler, 1995; Lareau, 2001). Based on the findings of this study, White parents may be more involved at home when they perceive teachers as less experienced; however, when they perceive classroom as a whole fails to support their children's needs, these White parents do not remain in silence; instead, they may be more involved in classrooms to advocate for their children (Seefeldt, et al., 1998). If the family selection hypothesis is true, the next question is how programs and teachers (institution) respond to parents' behaviors and requests. Do programs perceive these behaviors as intrusive and inappropriate? This is a critical question in that how teachers respond to parents' requests and behaviors determine the quality of home-school relations.

Different from White families, English-speaking Hispanic parents are less likely to challenge school authorities (Reese, 2002; Stevenson, et al., 1990). Thus, the English-speaking Hispanic parents may choose to be more involved at home but less involved in school when teachers and classroom fail to provide responsive care for their children. Regardless, it is a concern in that it suggests that Head Start practices seem to have limited influence on this group of parents. According to a report based on the FACES data, the main weakness of Head Start classrooms is that 75% of classrooms was rated as low cultural awareness (Zill, et al., 2003). It is possible that a classroom with low cultural awareness may fail to respond the needs of families from racial/ethnic minority backgrounds. Then again, how can we explain that classroom attributes seemed to have more positive effects on the Spanish-speaking Hispanic group than the

English-speaking Hispanic group if the classrooms overall had low cultural awareness? One possible explanation is that, based on the FACES 1997 data, the Spanish-speaking Hispanic children were more likely to be taught by teachers with Hispanic heritage (59%) as compared to English-speaking Hispanic children (22%). It is possible that the Hispanic teachers may be more aware of the cultural realities of the Hispanic families; thus, these teachers may be more effective in supporting parental involvement that reflects the needs of the Hispanic families. It is also possible that these Hispanic teachers may be able to speak Spanish; therefore, their effort to reach out to these Spanish-speaking Hispanic parents may be more effective. Even though English-speaking Hispanic families, theoretically, may have no problems to communicate with school and teachers, it is possible that these minority parents are looking for a teacher who can understand their struggles and who is capable of supporting their children's development of bilingualism (Barbarin et al., 2006). While there is no doubt that Head Start should provide more culturally-responsive care for children and families, future research must investigate how teachers' race may play a role in shaping home-school relations and parental involvement practices may add valuable information in this regard.

Lastly, perhaps, the most disturbing finding of this study is that Head Start teacher's' classroom practices seem to have little impact on parental involvement behaviors among the Black sample. One potential explanation is that, the Black children, on average, were in classrooms with lower quality and less positive teacher-child interactions. As a result, these contextual factors had little or no effect on parental involvement practices. Another possible explanation is that Black parents may choose to be involved in ways that reflect their beliefs. For instance, as found in this research, within the Black sample, teachers' teaching experiences were only associated with home-based involvement in learning activities, but not associated with other

forms of involvement. Research suggests that Black parents tend to express their concerns in racism (Caughy, et al., 2002; Garcia Coll, et al., 1996; Ogbu, 1981) and report unequal opportunities and treatment their children receive in school (Hughes & Kowk, 2007; Knopf & Swick, 2007; Lareau, 2001; McKay, et al., 2003; Tenenbaum & Ruck, 2007); thus, Black parents tend to be critical of school and teachers perceive these actions as threats (Garcia Coll, et al., 1996; Graue, et al., 2001). Under such circumstances, Black parents may choose to be involved more in home-based rather than school-based activities which are more sensible and comfortable for them (McKay, et al., 2003). Therefore, a successful parental involvement targeting Black families should be built upon mutual respects and effective communication between parents and staff (Barbarin, et al., 2006; Knopf & Swick, 2007; Overstreet, et al., 2005; Swick, 2004). Future research investigating the moderation and mediation effect of teacher-parent relationships on the link between school practices and parental involvement may shed light on the development of home-school relationships for the Black families.

4.9 LIMITATIONS

This study revealed several positive ways in which Head Start programs can foster and facilitate parental involvement within and outside of school for children and families from diverse racial/ethnic backgrounds.

However, several limitations should be considered. First, the model tested in this study does not represent a causal relationship, nor do the results implicate a directional effect. Therefore, implications regarding intervention strategies are made with this limitation in mind. Second, findings of this study may not be generalizable to other early childhood education

programs due to the distinct nature of Head Start programs and staff characteristics. Lastly, the data were collected between 1997 and 1998. Over the past decade, the characteristics of Head Start teacher and classroom attributes may have changed; yet, this dataset still have its strength include the breadth of ethnic and geographic diversity embedded in the FACES sample.

5.0 GENERAL IMPLICAITONS AND DIRECTIONS FOR FUTURE RESEARCH

This dissertation drew a conceptual framework on how Head Start may have an influence on children and families from diverse racial/ethnic backgrounds via investing in multifaceted parental involvement (see Figure 1). Findings suggest that parental involvement during the period of preschool is associated with not only child readiness but also individual growth during early transition. These findings are consistent with previous work that the effects of parental involvement are not simply the results of family selection (Dearing, et al., 2006; El Nokali, et al., 2010); instead, it is a critical component that may benefit ECE participation and later school performance (Ou, 2005; Reynolds, 1992, 1999). Yet, differences emerged across racial/ethnic groups. The pathways through which Head Start may exert its influence on child readiness and growth by involving parents in their children's education differ by race/ethnicity (see Figure 6 and 7). These differences may partially contribute to the observed readiness gap across racial/ethnic groups. To close the readiness gap, future research should identify the factors that strengthen the effects of parental involvement for *all* children, and identify the factors (i.e., School practices) that support multifaceted parental involvement for *all* families.

Recommendations for policy, practices, and future research are discussed. It should be noted that the hypothetical models (see Figure 6 and 7) are constructed based on the findings of this dissertation with two separate studies using the same dataset. Therefore, the implications and suggestions are made with this limitation in mind. Further study should test the whole

hypothetical model considering the multifaceted parental involvement as a mediator that links children's early experiences with later achievement. Investigation with within-group analysis is warranted to sharpen the intervention strategies for children and families from different racial/ethnic minority backgrounds.

5.1 IMPLICATIONS FOR EARLY CHILDHOOD EDUCAITON POLICY

5.1.1 Close the readiness gap by investing in parental involvement

As shown in Figure 6, school-based involvement emerged as the most meaningful parental involvement that supports child readiness with the White and the Spanish-speaking Hispanic samples. For the Black sample, school-based involvement and home-based involvement in cultural activities were associated with different child outcomes. However, parental involvement was not associated with positive child readiness among the English-speaking Hispanic group. Overall findings of this dissertation also suggest that Head Start practices (i.e., teacher and classroom attributes) were positively associated with the type of parental involvement that was associated with child outcomes for White and Spanish-speaking Hispanic group.

Results of group comparisons between the White and the Black group suggest that the magnitude of effects of the multifaceted parental involvement on child readiness outcomes were similar; yet, the effects of teacher and classroom attributes on the multifaceted parental involvement were either similar or stronger for the White than for the Black group. One may argue that the readiness gap in the cognitive domains between the White and the Black children

may be explained by whether the effects of Head Start practices are equally distributed to both groups, rather than whether the effects of parental involvement are equally distributed once parents are involved.

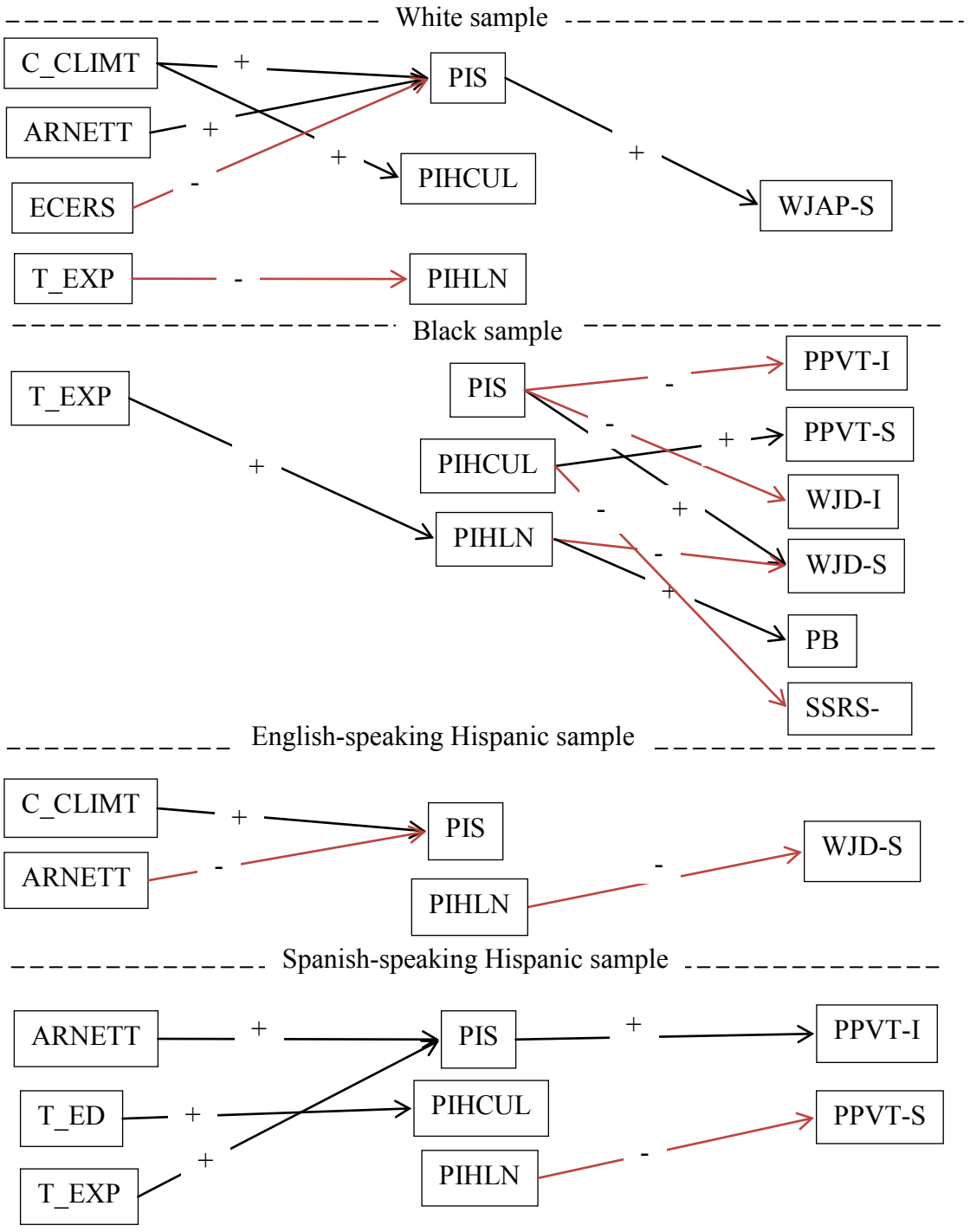
While comparing the differences between the White and the English-speaking Hispanic groups, the effects were likely to be similar in terms of the prediction of Head Start practices on parental involvement as well as that of parental involvement on child outcomes. That is, differences in effects of Head Start practices and parental involvement on child outcomes may be less likely to contribute to the readiness gap between these two groups.

While comparing the differences between the White and the Spanish-speaking Hispanic group, in many cases, the effects of the school-based involvement was stronger for the Spanish-speaking Hispanic than for the White; whereas the effects of home-based involvement was stronger for the White than for the Spanish-speaking Hispanic group. For this group, school-based involvement may be a unique factor that facilitates meaningful communications between home and school, which, in turn, improve the goodness-of-fit between home and school. In addition, while classroom contextual factors seemed to have similar effects on parental involvement between both groups, teacher attributes had stronger effects on the Spanish-speaking Hispanic group than for the White group. These findings suggest that the readiness gap between the White and Spanish-speaking Hispanic group may be explained by the habitus of parental involvement (e.g., lower levels of involvement in school).

This research provides valuable information for Head Start administrators and policymakers to understand what they can do to support child readiness (Goal 1) as well as growth through investing in parental involvement (Goal 8) (National Education Goals Panel, 1998). Head Start should continue to invest in parental involvement to support child readiness.

Yet, to close the readiness gap, Head Start should actively reach out to all parents to increase their awareness and willingness to participate in multifaceted parental involvement. Nevertheless, Head Start should also re-evaluate their efforts to support parental involvement for *all* children and families from diverse backgrounds.

The focus on parental involvement research will continue to grow in importance while more states and local school systems are increasingly invest in providing preschool programs (e.g., universal prekindergarten programs) for children and families from economically disadvantaged backgrounds. While the enrollment of children from racial/ethnic- and linguistic-diverse backgrounds is increasing, policymakers must address the issues of inequality and quality of parental involvement practices across groups. Otherwise, the readiness gap between racial/ethnic groups may become wider rather than closer.



Note. + represents a positive estimation; - represents a negative correlation.

Figure 6. Hypothetical models of relations among Head Start practices, multifaceted parental involvement, and child outcomes during early transition.

5.2 IMPLICATIONS FOR FUTURE RESEARCH

The theory of social capital and cultural capital provides a fundamental framework when considering home-school relations among children and families from racial/ethnic minority groups. Findings of this research partially confirms the theory of cultural capital that children and families from the racial/ethnic minority groups may be at risk due to the habitus of parental involvement (i.e., lower levels of involvement in school settings and at home). Yet, although the extent of parental involvement matters, *facets* and *quality* of parental involvement matter too!

To move the field forward, future research must identify the type of parental involvement that may be unique and developmentally meaningful to the minority groups. Epstein's six types of parental involvement provide a comprehensive framework to guide the direction of parental involvement research. Future research should re-evaluate whether these categories have covered all types of involvement that are demonstrated by families from racial/ethnic minority groups. In addition, within each category, researchers should consider whether the items measured capture the activities that are developmentally and educationally meaningful to children and families from racial/ethnic minority groups. Without addressing these issues, the measure of parental involvement may be culturally-biased.

In addition, the various ways in which parents are involved at home and at school may decide whether their involvement effort is effective to support child development or not (Dodici, Draper, & Peterson, 2003; Hughes & Kowk, 2007; Pomerantz, et al., 2007). In other words, quality of parental involvement may be a significant *moderator* that interacts with the effects of levels of parental involvement on child outcomes. For instance, within the home context, if parents are involved in a problematic way (e.g., lack of positive affect or intrusive), children are less likely to be benefited from such involvement. The concerns of the quality of parental

involvement may be especially critical for children and families form low-income and racial/ethnic minority backgrounds (Brooks-Gunn & Duncan, 1997; Brooks-Gunn & Markman, 2005; Dodici, et al., 2003; Letourneau et al., 2001; Vandermaas-Peeler, Nelson, Bumpass, & Sassine, 2009). Prior work has indicated that variations in parenting practices across racial/ethnic groups was associated with the readiness gap (Brooks-Gunn, et al., 2003; Brooks-Gunn & Markman, 2005). It is possible that parents of children from different racial/ethnic group may demonstrate different style (quality) of involvement that may explain the variations in the effects of parental involvement on child outcomes.

Within the school context, how parents and teachers interact with each other may also have an influence on the effective of school-based involvement (Knopf & Swick, 2007; Swick, 2004). Post work suggests that teachers tend to report having less supportive relationships with Black parents, relative to Hispanic and White parents (Hughes, et al., 2005; Hughes & Kowk, 2007). This may explain why Black parents' involvement in school was negatively associated with a wide array of child readiness outcomes. Future research investigating the three-way interaction (e.g., school-based involvement × teacher-parent relationship × race/ethnicity; home-based involvement × parent-child relationships × race/ethnicity) may shed lights on parental involvement research aiming to close the readiness gap.

The quality of parental involvement may *mediate* the effects of school practices on child outcomes. That is, within the low-income families, school practices may be not necessary able to increase levels of multifaceted parental involvement; yet, it may increase the quality of parental involvement, such as demonstrating developmentally appropriate practices when interacting with children in learning or cultural activities at home, which, in turn, supports child readiness (Dodici, et al., 2003) Similarly, school practices may not necessary increase levels of school-

based involvement due to family constraints, but it may increase the quality of school-based involvement (e.g., positive teacher-parent relationships) which may lead to better child outcomes. In short, increasing levels of parental involvement is the first step to support child readiness. The next step, researchers should go deeper and understand how quality of parental involvement may play a role in the process, and how parents of children from different racial/ethnic groups may have different styles (quality) of parental involvement. This line of research may strengthen the effectiveness of ECE practices to support child readiness among low-income families and close the readiness gap across racial/ethnic groups.

Lastly, the hidden bias toward the white-, middle- and upper-class families within the ECE classrooms may compromise the effects of school practices to reach out to families from the disadvantaged backgrounds. Similarly, this research found that the effects of classroom context were more pronounced for the white groups than for the minority groups. It is possible that the measures of classroom contextual factors in this research did not capture the type of practices that were culturally responsive. Future research should identify these factors to sharpen the effectiveness of intervention efforts.

5.3 IMPLICATIONS FOR PRACTICES

Head Start should re-evaluate its efforts to support children and families from diverse racial/ethnic backgrounds. Overall, the effects of different facets of parental involvement were somehow different across racial/ethnic groups. Even so, these findings did not diminish the importance of any aspect of parental involvement. Instead, it suggests that there is no “one size fits all” strategy when it comes to support parental involvement. Therefore, teachers should be

creative to support the parental involvement in ways that are educationally and developmentally meaningful to children and families from diverse racial/ethnic backgrounds. Again, what the meaningful parental involvement is may mean different things to parents and children from different racial/ethnic groups. The point is *how to make **all involvement** count—both home and school with equal respect.* First of all, teachers must recognize that children do not just learn at school; instead, children also learn at home and in community. Epstein's framework of six types of involvement provides a comprehensive guideline for teachers to support multifaceted parental involvement (Epstein, 1995). Teachers also need to recognize that parents' beliefs and practices about parental involvement are culturally bound (Lareau, 2001) and that there may be other equally good way of supporting child development. Even if parents are involved in ways that are problematic, teachers should approach to parents in a non-judgmental way. As such, there is a better chance of developing trusting teacher-parent relationships, which, in turn, may lead to better child outcomes (Eberly, Joshi, & Konzal, 2007).

In addition, teachers need to consider family constraints and cultural barriers that parents are facing to better understand the type and the level of involvement that the family is capable of providing (Gavin & Greenfield, 1998). Teachers should express their understanding and responsiveness to the various needs of families by giving parents options to decide when, where, and how to involve. Knoph and Swick (2008) suggest three essential questions guiding the development and effective approaches for working with families: (1) is the pathway accessible to parents?; (2) is there a viable set of supports that help and encourage parents to use different venues for involvement?; and (3) are there several ways for families to get involved and use their talents and strengths (p. 421)? To be able to answer these questions, teachers have to have a full understanding about how and what parents are involved outside of school. Within the Head Start

context, teachers can evaluate these questions by using survey or family communication journal, or even during the home visits. Teachers have to understand that parents are not always involved in ways as they expect. To support meaningful parental involvement, teachers have to respect parents' choice and decisions, and provide supports for families that are built upon their needs and strengths.

Lastly, children from different racial/ethnic groups seem to have different experiences within Head Start classrooms (Johnson, et al., 2003; Tonyan & Howes, 2003). On average, children and families from the minority groups were in classrooms with less educated teachers, less supportive teacher-child interactions, and lower classroom quality. This troubling finding suggests that the resources within the Head Start context are not equally accessible to children and families from different racial/ethnic backgrounds. Head Start has to address this issue by investing in more highly educated and experienced teachers and higher quality classrooms to make the resources accessible and equitable for all children and families.

APPENDIX A

NUMBER OF CHILDREN RECEIVING THE SPANISH-LANGUAGE ASSESSMENTS

BY RACE/ETHNICITY

Race/Ethnicity	Spring 1998	Spring 1999	Spring 2000
PPVT Spanish-version			
White	3	4	3
Black	0	0	0
English-speaking Hispanic	0	0	0
Spanish-speaking Hispanic	68	71	78
WJAP Spanish-version			
White	3	4	4
Black	0	0	0
English-speaking Hispanic	0	0	0
Spanish-speaking Hispanic	90	80	78
WJD Spanish-version			
White	3	4	4
Black	0	0	0
English-speaking Hispanic	0	0	0
Spanish-speaking Hispanic	90	76	73

Note. This table shows the unweighted n. PPVT = vocabulary test; WJD = literacy test; WJAP = early mathematics test.

APPENDIX B

PARENTAL INVOLVEMENT MEASURES IN THE FACES SURVEY

Table B1

School-based Involvement

	Survey items	Descrpitions
Please indicate how often you have participated in the following activities at CHILD's Head Start center since the beginning of this Head Start year. Volunteered or helped out in CHILD's classroom?		
1	C1A_S98HS	Volunteered in classroom
2	C1B_S98HS	Observed classroom 30 min
3	C1C_S98HS	Prepared food/materials
4	C1D_S98HS	Helped with field trips
5	C1E_S98HS	Attended Head Start social events
6	C1F_S98HS	Attended parent education meetings or workshops
7	C1G_S98HS	Attended parent-teacher conference
8	C1H_S98HS	Visited with a Head Start staff member in your home
9	C1I_S98HS	Attended a Head Start event with spouse or partner
10	C1J_S98HS	Attended a Head Start event with another adult
11	C1K_S98HS	Participated in Policy Council, monitoring-related activities, or other Head Start planning groups
12	C1L_S98HS	Called or visited another Head Start parent on a matter related to Head Start
13	C1M_S98HS	Prepared or distributed newsletters, fliers, or Head Start materials
14	C1N_S98HS	Participated in fundraising activities

Table B2

Home-based Involvement in Learning Activities

	Survey items	Descrpitions
In the past week, have you or someone in your family involved in the following activities? How many times?		
1	D1_S99HS	Read to (child)
2	D3A_S98HS	Told (him/her) a story
3	D3B_S98HS	Taught (him/her) letters, words, or numbers
4	D3C_S98HS	Taught (him/her) songs or music
5	D3D_S98HS	Work in arts and crafts with (him/her)
6	D3E_S98HS	Played with toys or games indoors
7	D3F_S98HS	Played a game, sport, or exercised together
8	D3J_S98HS	Talked about TV/videos-mom
9	D3K_S98HS	Played counting games like singing songs with numbers or reading books with numbers

Table B3

Home-based Involvement in Cultural Activities

	Survey items	Descrpitions
Survey question: In the past month, that is since [MONTH] [DAY], has anyone in your family done the following things with CHILD?		
1	D6A_98	Visited a library
2	D6C_98	Gone to a play, concert, or other live show
3	D6E_98	Visited an art gallery, museum, or historical
4	D6G_98	Visited a zoo or aquarium
5	D6H_98	Talked with CHILD about (her/his)) family history or ethnic heritage
6	D6I_98	Attended an event sponsored by a community, ethnic, or religious group
7	D6J_98	Attended an athletic or sporting event in which CHILD was not a player

APPENDIX C

CORRELATION MATRIX FOR STUDY 1

Table C1

Correlation Matrix for the White Sample

	Variable	1	2	3	4	5	6	7	8	9	10	11
1	Child age of assessment	-										
2	Income-to-needs ratio	.046	-									
3	Maternal employment status	-.033	.198**	-								
4	Parental education	.020	.165**	.104*	-							
5	Emergent literacy	.500**	.126**	.043	.152**	-						
6	Problem behaviors	.017	-.029	-.042	-.018	-.236**	-					
7	School-based involvement	-.085	.078	-.145**	.118*	.053	-.036	-				
8	Home-based involvement in learning activities	-.070	.058	-.037	.079	.133**	-.069	.303**	-			
9	Home-based involvement in cultural activities	.013	.126**	.079	.261**	.180**	-.135**	.273**	.343**	-		
10	Vocabulary in spring 1998	.544**	.089	.102*	.173**	.501**	-.068	.000	.059	.131**	-	

11	Vocabulary in spring 1999	.580**	.146**	.105*	.145**	.485**	-.087	.051	.062	.183**	.732**	-
12	Vocabulary in spring 2000	.374**	.170**	.124*	.166**	.408**	-.102	.048	.106*	.135**	.678**	.634**
		1	2	3	4	5	6	7	8	9	13	14
13	Mathematics in spring 1998	.405**	.145**	.128*	.117*	.523**	-.169**	-.038	.113*	.099	-	
14	Mathematics in spring 1999	.531**	.098*	.121*	.115*	.538**	-.107*	.012	.032	.079	.681**	-
15	Mathematics in spring 2000	.508**	.064	.056	.041	.472**	-.118*	.038	-.015	.047	.587**	.626**
		1	2	3	4	5	6	7	8	9	16	17
16	Literacy in spring 1998	.399**	.144**	.130*	.054	.538**	-.120*	-.030	.035	.061	-	
17	Literacy in spring 1999	.611**	.085	.104*	.079	.547**	-.040	-.046	-.043	.062	.492**	-
18	Literacy in spring 2000	.482**	.039	.093	.065	.456**	-.121*	-.022	-.012	.063	.553**	.575**
		1	2	3	4	5	6	7	8	9	19	20
19	Social skills in spring 1998	.275**	.013	.045	.019	.344**	-.234**	.014	.010	.142**	-	
20	Social skills in spring 1999	.053	.005	.036	.011	.192**	-.186**	.120*	-.011	.078	.395**	-
21	Social skills in spring 2000	-.009	-.029	-.038	.039	.168**	-.229**	.073	.029	.027	.347**	.374**
		1	2	3	4	5	6	7	8	9	22	23
22	Problem behaviors in spring 1998	-.153**	.086	.021	.011	-.195**	.204**	.010	-.007	-.056	-	
23	Problem behaviors in spring 1999	.006	.020	-.053	-.055	-.142**	.209**	-.112*	-.002	-.029	.464**	-
24	Problem behaviors in spring 2000	.012	.043	-.023	-.087	-.177**	.243**	-.072	-.001	-.062	.336**	.553**

Note. *$p < .05$. **$p < .01$.

Table C2

Correlation Matrix for the Black Sample

	Variables	1	2	3	4	5	6	7	8	9	10	11
1	Child age of assessment	-										
2	Income-to-needs ratio	.034	-									
3	Maternal employment status	.023	.299**	-								
4	Parental education	.031	.239**	.228**	-							
5	Emergent literacy	.470**	.107**	.080	.207**	-						
6	Problem behaviors	-.097*	-.069	-.112**	-.213**	-.321**	-					
7	School-based involvement	-.033	.051	-.025	.058	.170**	-.060	-				
8	Home-based involvement in learning activities	-.052	.108**	.031	.063	.148**	-.153**	.328**	-			
9	Home-based involvement in cultural activities	.017	.172**	.110**	.163**	.183**	-.117**	.350**	.449**	-		
10	Vocabulary in spring 1998	.524**	.201**	.079	.221**	.429**	-.224**	-.019	.075	.076	-	
11	Vocabulary in spring 1999	.603**	.146**	.051	.126**	.496**	-.177**	-.020	.043	.082	.691**	-
12	Vocabulary in spring 2000	.444**	.222**	.106*	.235**	.430**	-.189**	.040	.046	.160**	.674**	.745**
		1	2	3	4	5	6	7	8	9	13	14
13	Mathematics in spring 1998	.404**	.105*	.048	.175**	.484**	-.192**	.042	.043	.081	-	
14	Mathematics in spring 1999	.548**	.049	.033	.091*	.477**	-.154**	-.067	-.019	.007	.621**	-
15	Mathematics in spring 2000	.511**	.072	.057	.165**	.463**	-.213**	.013	.018	.030	.538**	.642**
		1	2	3	4	5	6	7	8	9	16	17
16	Literacy in spring 1998	.465**	.072	.100*	.210**	.452**	-.180**	-.017	-.012	.046	-	
17	Literacy in spring 1999	.678**	.055	.087	.151**	.546**	-.169**	-.040	.007	.031	.562**	-
18	Literacy in spring 2000	.423**	.124**	.065	.176**	.340**	-.154**	-.021	-.054	.014	.416**	.543**
		1	2	3	4	5	6	7	8	9	19	20
19	Social skills in spring 1998	.245**	.058	.065	.100*	.297**	-.258**	.009	.070	.018	-	
20	Social skills in spring 1999	.130**	.095*	.093	.069	.179**	-.218**	-.038	.023	-.012	.362**	-
21	Social skills in spring 2000	-.025	.075	.110*	.112*	.158**	-.235**	.020	.042	-.062	.170**	.397**
		1	2	3	4	5	6	7	8	9	22	23
22	Problem behaviors in spring 1998	-.200**	-.012	-.126**	-.112**	-.262**	.284**	.058	.004	-.014	-	

23	Problem behaviors in spring 1999	-.044	-.038	-.077	-.105*	-.188**	.243**	-.030	-.032	.003	.414**	-
24	Problem behaviors in spring 2000	.028	-.068	-.087	-.134**	-.167**	.249**	-.051	-.038	.024	.317**	.445**

Note. *$p < .05$. **$p < .01$.

Table C3

Correlation Matrix for the English-Speaking Hispanic Sample

	Variable	1	2	3	4	5	6	7	8	9	10	11
1	Child age of assessment	-										
2	Income-to-needs ratio	-.142	-									
3	Maternal employment status	-.132	.173*	-								
4	Parental education	-.198*	.172*	.328**	-							
5	Emergent literacy	.437**	.091	.079	.162*	-						
6	Problem behaviors	-.100	-.040	-.116	-.085	-.251**	-					
7	School-based involvement	.055	.009	-.050	.128	.231**	-.088	-				
8	Home-based involvement in learning activities	.081	.117	-.077	.056	.262**	-.124	.324**	-			
9	Home-based involvement in cultural activities	.054	.024	.023	.202**	.230**	-.036	.255**	.348**	-		
10	Vocabulary in spring 1998	.474**	.106	.013	.172*	.497**	-.113	.200*	.160*	.177*	-	
11	Vocabulary in spring 1999	.555**	-.021	.012	.121	.531**	-.155	.246**	.135	.289**	.740**	-
12	Vocabulary in spring 2000	.398**	.071	.069	-.010	.401**	-.055	.114	.093	.161	.678**	.770**
		1	2	3	4	5	6	7	8	9	13	14
13	Mathematics in spring 1998	.392**	.037	.044	.063	.533**	-.227*	.151	-.066	.025	-	
14	Mathematics in spring 1999	.560**	-.023	.134	.100	.473**	-.125	.218*	.051	.137	.603**	-
15	Mathematics in spring 2000	.454**	-.001	.026	.110	.417**	-.123	.132	.094	.138	.550**	.713**
		1	2	3	4	5	6	7	8	9	16	17
16	Literacy in spring 1998	.462**	-.008	.101	.143	.569**	-.156	-.005	.035	.133	-	
17	Literacy in spring 1999	.596**	-.069	.061	.016	.474**	-.182*	.174*	.194*	.139	.564**	-
18	Literacy in spring 2000	.474**	.038	-.071	.013	.424**	-.084	.160	.113	.118	.340**	.615**
		1	2	3	4	5	6	7	8	9	19	20
19	Social skills in spring 1998	.430**	-.075	-.129	-.012	.352**	-.189*	.157	.075	-.007	-	
20	Social skills in spring 1999	.280**	.049	.064	.069	.291**	-.273**	.006	.072	.193*	.357**	-
21	Social skills in spring 2000	.053	-.039	.080	.178	.139	-.188	.093	.138	-.006	.189	.325**
		1	2	3	4	5	6	7	8	9	22	23
22	Problem behaviors in spring 1998	-.244**	.085	.101	-.024	-.236**	.211**	.075	-.131	.027	-	

23	Problem behaviors in spring 1999	-.142	.016	.000	-.076	-.168	.231*	.165	-.018	-.120	.376**	-
24	Problem behaviors in spring 2000	.103	-.067	-.118	-.151	-.249*	.265**	-.268**	-.230*	-.008	.201*	.205

Note. *$p < .05$. **$p < .01$.

Table C4

Correlation Matrix for the Spanish-Speaking Hispanic Sample

	Variable	1	2	3	4	5	6	7	8	9	10	11
1	Child age of assessment	-										
2	Income-to-needs ratio	.021	-									
3	Maternal employment status	.100	.276**	-								
4	Parental education	-.125*	.163**	.066	-							
5	Emergent literacy	.311**	.068	-.048	.094	-						
6	Problem behaviors	-.068	-.124*	.022	-.040	-.214**	-					
7	School-based involvement	.064	-.037	-.145*	.143*	.195**	-.042	-				
8	Home-based involvement in learning activities	-.127*	-.035	-.095	.202**	.228**	-.119*	.249**	-			
9	Home-based involvement in cultural activities	-.022	.035	.055	.097	.235**	-.090	.309**	.477**	-		
10	Vocabulary in spring 1998	.481**	-.015	.059	-.018	.375**	-.092	.183*	-.028	.019	-	
11	Vocabulary in spring 1999	.381**	.008	.093	-.022	.337**	-.044	.214**	-.037	.048	.706**	-
12	Vocabulary in spring 2000	.192*	.090	.071	.069	.193**	.059	.121	-.049	-.020	.532**	.730**
		1	2	3	4	5	6	7	8	9	13	14
13	Mathematics in spring 1998	.309**	-.064	.026	-.018	.284**	.003	.051	-.087	.064	-	
14	Mathematics in spring 1999	.451**	-.011	-.016	-.091	.372**	-.116	.128	-.069	.014	.463**	-
15	Mathematics in spring 2000	.392**	-.036	.026	-.151*	.304**	-.021	.193*	-.085	.054	.499**	.687**
		1	2	3	4	5	6	7	8	9	16	17
16	Literacy in spring 1998	.306**	-.064	.043	-.018	.498**	-.044	.003	-.003	.011	-	
17	Literacy in spring 1999	.487**	-.131	.017	-.061	.360**	-.125	.044	.005	.020	.425**	-
18	Literacy in spring 2000	.232**	.041	-.009	.003	.379**	-.039	.149	-.079	.100	.406**	.528**
		1	2	3	4	5	6	7	8	9	19	20
19	Social skills in spring 1998	.163**	-.041	-.007	-.033	.184**	-.136*	.030	.017	.023	-	
20	Social skills in spring 1999	.123	-.032	-.080	.055	.073	-.108	.079	-.023	-.041	.362**	-
21	Social skills in spring 2000	.027	.071	-.011	.038	.170*	-.203**	-.097	.042	.049	.250**	.222*
		1	2	3	4	5	6	7	8	9	22	23
22	Problem behaviors in spring 1998	-.107	.030	-.019	.070	-.118	.155*	-.087	.000	-.055	-	

23	Problem behaviors in spring 1999	.032	.006	.083	-.012	-.097	.119	.049	.062	-.002	.338**	-
24	Problem behaviors in spring 2000	.050	-.106	-.051	.015	-.209**	.341**	.111	-.031	-.030	.342**	.372**

Note. *$p < .05$. **$p < .01$.

APPENDIX D

UNSTANDARDIZED ESTIMATES OF CONDITIONAL LATENT GROWTH MODELS BY RACE/ETHNICITY

Table D1

Vocabulary

Parameter	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic		
	B	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2
PIS			11.1%			5.2%			18.6%			4.7%
←Child age of assessment	-0.13**	0.05		-0.15**	0.05		-0.22*	0.10		0.07	0.08	
←Income-to-needs ratio	0.09*	0.04		-			-			-		
←Maternal employment	-0.17**	0.05		-			-0.21*	0.08		-0.12	0.07	
←Parental education	0.06**	0.02		0.03	0.03		0.09*	0.04		-		
←Emergent Literacy	0.05**	0.02		0.07**	0.02		0.14**	0.04		0.06	0.03	
←Problem behaviors	-			0.01	0.01		-			-		

PIHLN			6.0%			4.9%			15.3%			13.4%
←Child age of assessment	-0.11**	0.03		-0.11*	0.05		0.05	0.06		-0.15*	0.06	
←Income-to-needs ratio	-			0.07*	0.03		-			-0.07	0.05	
←Maternal employment	-			-			-0.12*	0.06		-0.07	0.05	
←Parental education	-			-			-			0.02	0.02	
←Emergent Literacy skills	0.07**	0.02		0.05**	0.02		0.09**	0.02		0.08**	0.03	
←Problem behaviors	-			-			-0.01	0.01		-0.01	0.01	
PIHLN			11.7%			9.1%			9.3%			9.9%
←Child age of assessment	-0.24	0.15		-0.19	0.14		-0.26	0.27		-0.41*	0.21	
←Income-to-needs ratio	-			0.25*	0.11		-0.33	0.25		-		
←Maternal employment	-			-			-			-		
←Parental education	0.33**	0.06		0.19*	0.08		0.22*	0.11		0.06	0.06	
←Emergent Literacy skills	0.16**	0.06		0.20**	0.06		0.26*	0.11		0.27**	0.09	
←Problem behaviors	-0.05*	0.03		-0.02	0.02		-			-0.03	0.03	
Intercept of PPVT			51.5%			53.5%			53.7%			32.7%
←Child age of assessment	0.82**	0.10		0.83**	0.09		0.65**	0.18		1.10**	0.21	
←Income-to-needs ratio	0.20*	0.08		-			-			-0.15	0.16	
←Maternal employment	0.08*	0.03		0.13**	0.03		-			0.04	0.06	
←Parental education	0.23**	0.04		0.20**	0.04		0.28**	0.06		0.10	0.07	
←Emergent Literacy skills	0.00	0.01		-			-			-		
←Problem behaviors	0.10	0.07		0.23**	0.06		0.17	0.13		-		
←PIS	0.06	0.13		-0.25*	0.12		0.15	0.21		0.46*	0.23	
←PIHLN	0.23	0.17		0.08	0.12		-0.23	0.21		0.28	0.31	
←PIHCUL	0.03	0.04		-0.04	0.03		0.03	0.05		-0.10	0.10	
Slope of PPVT			16.8%			24.7%			15.7%			27.9%
←Child age of assessment	-0.19**	0.05		-0.18**	0.04		-0.17*	0.08		-0.39**	0.08	
←Income-to-needs ratio	-			-			-			0.16	0.09	
←Maternal employment	-			-			-			-		

←Parental education	-		-		-		-	
←Emergent Literacy skills	-0.04	0.02	-0.04*	0.02	-0.04	0.04	-	
←Problem behaviors	-		-		-		0.02	0.01
←PIS	-0.01	0.07	0.07	0.05	-0.07	0.11	-0.07	0.10
←PIHLN	-0.04	0.09	-0.04	0.07	0.10	0.10	-0.22*	0.11
←PIHCUL	-0.01	0.02	0.03*	0.02	0.01	0.03	0.04	0.04

Note. A dash means the parameter was set as 0. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities.

Table D2

Math

Parameter	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic		
	B	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2
PIS			12.4%			5.0%			18.0%			4.3%
←Child age of assessment	-0.15**	0.05		-0.15**	0.05		-0.22*	0.10		-		
←Income-to-needs ratio	0.09*	0.04		-			-			0.06	0.08	
←Maternal employment	-0.18**	0.05		-			-0.20*	0.08		-0.10	0.07	
←Parental education	0.07**	0.02		0.03	0.03		0.09*	0.04		-		
←Emergent Literacy	0.05**	0.02		0.07**	0.02		0.14**	0.04		0.06	0.03	
←Problem behaviors	-			0.01	0.01		-			-		
PIHLN			7.5%			4.6%			15.5%			13.2%
←Child age of assessment	-0.11**	0.03		-0.09*	0.05		0.06	0.06		-0.15*	0.06	
←Income-to-needs ratio	-			0.06	0.04		-			-0.07	0.05	
←Maternal employment	-0.07*	0.04		0.05	0.05		-0.12*	0.06		-0.07	0.05	
←Parental education	0.03	0.02		-			-			0.02	0.02	
←Emergent Literacy skills	0.07**	0.02		0.05**	0.02		0.09**	0.02		0.08**	0.03	
←Problem behaviors	-			-			-0.01	0.01		-0.01	0.01	
PIHLN			12.8%			9.5%			9.8%			9.7%
←Child age of assessment	-0.26	0.15		-0.20	0.14		-0.27	0.26		-0.40	0.21	
←Income-to-needs ratio	-			0.21	0.12		-0.32	0.25		-		
←Maternal employment	-			0.17	0.16		-			-		
←Parental education	0.36**	0.07		0.19*	0.08		0.21*	0.11		0.06	0.06	
←Emergent Literacy skills	0.16**	0.06		0.21**	0.06		0.24*	0.11		0.27**	0.09	
←Problem behaviors	-0.05	0.03		-			-0.02	0.03		-0.03	0.03	
Intercept of WJAP			46.6%			47.0%			64.1%			34.0%

←Child age of assessment	0.21**	0.03		0.25**	0.03		0.20**	0.06		0.24**	0.07	
←Income-to-needs ratio	-			0.04	0.02		0.03	0.05		-		
←Maternal employment	0.08**	0.03		-0.03	0.03		-			-0.14	0.10	
←Parental education	0.02	0.01		-			-			-0.04	0.03	
←Emergent Literacy skills	0.13**	0.02		0.13**	0.02		0.13**	0.03		0.15**	0.05	
←Problem behaviors	-			-0.01*	0.01		-0.02	0.01		-		
←PIS	-0.08	0.05		-0.08	0.07		0.10	0.07		0.04	0.11	
←PIHLN	0.06	0.06		-0.03	0.08		-0.18*	0.08		-0.24	0.18	
←PIHCUL	0.00	0.02		-0.01	0.02		0.00	0.03		0.02	0.05	
Slope of WJAP			7.8%			8.1%			12.0%			29.9%
←Child age of assessment	-			-			-			-		
←Income-to-needs ratio	-			-			-			0.05	0.04	
←Maternal employment	-			-			-			-		
←Parental education	-			0.02**	0.01		0.02	0.02		-		
←Emergent Literacy skills	-0.02*	0.01		-0.03**	0.01		-0.03*	0.01		-0.06**	0.02	
←Problem behaviors	-			-			-			-		
←PIS	0.07*	0.03		0.02	0.04		-0.03	0.04		0.04	0.05	
←PIHLN	-0.05	0.04		-0.02	0.04		0.07	0.05		0.13	0.08	
←PIHCUL	-0.01	0.01		0.00	0.01		0.00	0.02		-0.03	0.02	

Note. A dash means the parameter was set as 0. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities.

*p < .05; **p < .01.

Table D3

Literacy

Parameter	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic		
	B	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2
PIS			11.9%			4.8%			18.5%			4.0%
←Child age of assessment	-0.14**	0.05		-0.15**	0.05		-0.22*	0.10		-		
←Income-to-needs ratio	0.09*	0.04		-			-			-		
←Maternal employment	-0.18**	0.05		-			-0.21*	0.08		-0.09	0.06	
←Parental education	0.06**	0.02		0.03	0.03		0.09*	0.04		-		
←Emergent Literacy	0.05**	0.02		0.06**	0.02		0.14**	0.04		0.06	0.03	
←Problem behaviors	-			0.01	0.01		-			-		
PIHLN			6.9%			4.9%			15.0%			13.0%
←Child age of assessment	-0.11**	0.03		-0.10*	0.05		-			-0.16*	0.06	
←Income-to-needs ratio	-			0.06	0.04		-			-0.07	0.05	
←Maternal employment	-0.06	0.04		0.04	0.05		-0.11*	0.05		-0.07	0.05	
←Parental education	-			-						0.02	0.02	
←Emergent Literacy skills	0.07**	0.02		0.05**	0.02		0.09**	0.02		0.09**	0.03	
←Problem behaviors	-			-			-0.01	0.01		-		
PIHLN			11.7%			9.1%			10.0%			10.1%
←Child age of assessment	-0.27	0.15		-0.17	0.14		-0.28	0.27		-0.47*	0.21	
←Income-to-needs ratio	-			0.22	0.12		-0.38	0.24		-		
←Maternal employment	-			0.14	0.16		-			-		
←Parental education	0.33**	0.06		0.18*	0.08		0.22*	0.11		0.05	0.06	
←Emergent Literacy skills	0.17**	0.06		0.19**	0.06		0.26*	0.10		0.30**	0.09	
←Problem behaviors	-0.05	0.03		-0.02	0.02		-			-		
Intercept of WJD			67.3%			72.7%			51.8%			59.7%

←Child age of assessment	0.42**	0.09		0.59**	0.09		0.31**	0.04		0.31*	0.13
←Income-to-needs ratio	-			-			0.20	0.11		-	
←Maternal employment	0.08*	0.04		-			-			-	
←Parental education	-			0.07	0.04		-			-	
←Emergent Literacy skills	0.30**	0.03		0.23**	0.03		0.24**	0.04		0.21**	0.04
←Problem behaviors	-			-			-			-	
←PIS	-0.11	0.10		-0.24*	0.10		-0.08	0.14		-0.01	0.12
←PIHLN	-0.11	0.12		0.03	0.10		-0.11	0.14		0.07	0.15
←PIHCUL	-0.04	0.04		-0.04	0.03		0.05	0.04		-0.02	0.06
Slope of WJD			49.0%			43.4%			23.4%		25.2%
←Child age of assessment	-0.07	0.04		-0.15**	0.05		-			-0.17*	0.08
←Income-to-needs ratio	-0.03*	0.01		0.04**	0.01		-0.13	0.08		0.05	0.05
←Maternal employment	-			-			-			-0.03	0.04
←Parental education	0.02*	0.01		-0.02	0.02		0.02	0.02		-	
←Emergent Literacy skills	-0.11**	0.02		-0.08**	0.02		-0.09**	0.03		-0.03	0.02
←Problem behaviors	-			-			-			0.01	0.01
←PIS	0.09	0.05		0.12*	0.05		0.09	0.08		0.04	0.09
←PIHLN	0.00	0.06		-0.10*	0.05		0.03	0.08		-0.15	0.10
←PIHCUL	0.01	0.02		0.02	0.02		-0.02	0.02		0.02	0.03

Note. A dash means the parameter was set as 0. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities.

*$p < .05$; **$p < .01$.

Table D4

Social Skills

Parameter	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic		
	B	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2
PIS			12.0%			5.2%			18.9%			4.0%
←Child age of assessment	-0.14**	0.05		-0.15**	0.05		-0.22*	0.10		-		
←Income-to-needs ratio	0.09*	0.04		-0.03	0.05		-			-		
←Maternal employment	-0.18**	0.05		-			-0.22*	0.09		-0.09	0.06	
←Parental education	0.06**	0.02		0.04	0.03		0.09*	0.04		-		
←Emergent Literacy	0.05**	0.02		0.07**	0.02		0.14**	0.04		0.06	0.03	
←Problem behaviors		-		0.01	0.01		-			-		
PIHLN			7.0%			4.7%			16.1%			12.4%
←Child age of assessment	-0.11**	0.03		-0.10*	0.05		-			-0.15*	0.06	
←Income-to-needs ratio		-		0.05	0.03		0.06	0.06		-0.08	0.05	
←Maternal employment	-0.06	0.04		0.04	0.05		-0.14*	0.06		-0.08	0.05	
←Parental education		-		0.01	0.02		-			0.02	0.02	
←Emergent Literacy skills	0.07**	0.02		0.05**	0.02		0.09**	0.02		0.09**	0.03	
←Problem behaviors		-		0.00	0.01		-0.01	0.01		-		
PIHLN			11.6%	-		9.2%			10.0%			9.5%
←Child age of assessment	-0.25	0.15		-0.17	0.14		-0.25	0.26		-0.43*	0.21	
←Income-to-needs ratio		-		0.18	0.12		-0.30	0.25		-		
←Maternal employment		-		0.13	0.16		-0.17	0.23		-		
←Parental education	0.33**	0.06		0.20*	0.10		0.24*	0.11		0.05	0.06	
←Emergent Literacy skills	0.16**	0.06		0.19**	0.06		0.24*	0.10		0.29**	0.09	
←Problem behaviors	-0.05*	0.03		-0.01	0.02		-0.03	0.03		-		
Intercept of social skills			15.0%			25.9%			26.3%			10.0%

←Child age of assessment	0.10	0.57	1.13*	0.48	3.38**	0.85	-	
←Income-to-needs ratio		-	-		-1.30	0.71	-1.19	0.88
←Maternal employment		-	-		-		-0.58	0.59
←Parental education		-	-		-		-0.21	0.22
←Emergent Literacy skills	0.71**	0.15	0.50*	0.21	-		0.55*	0.23
←Problem behaviors	-0.30**	0.08	-0.26**	0.07	-0.27**	0.09	-0.10	0.09
←PIS	-0.84	0.64	-0.41	0.69	1.77	1.06	0.21	0.77
←PIHLN	0.16	0.16	-0.06	0.59	0.19	1.07	0.68	0.83
←PIHCUL	-0.20	0.20	0.04	0.19	0.08	0.37	-0.01	0.24
Slope of social skills				18.8%		6.3%		
←Child age of assessment		-	-1.28**	0.39	-1.03	0.64	-	
←Income-to-needs ratio		-	-		-		-	
←Maternal employment		-	0.27**	0.32	-		-	
←Parental education		-	0.05	0.12	-		-	
←Emergent Literacy skills		-	0.26	0.14	-		-	
←Problem behaviors		-	-		-		-	
←PIS		-	0.05	0.49	-0.46	0.66	-	
←PIHLN		-	0.43	0.45	-0.17	0.77	-	
←PIHCUL		-	-0.44**	0.13	-0.10	0.28	-	

Note. A dash means the parameter was set as 0. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities.

*$p < .05$; **$p < .01$.

Table D5

Problem Behaviors

Parameter	White			Black			English-speaking Hispanic			Spanish-speaking Hispanic		
	B	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2
PIS			12.6%			5.3%			18.5%			4.0%
←Child age of assessment	-0.14**	0.05		-0.15**	0.05		-0.20*	0.10		-		
←Income-to-needs ratio	0.09*	0.04		-			-			-		
←Maternal employment	-0.18**	0.05		-			0.21*	0.08		-0.09	0.06	
←Parental education	0.07**	0.02		0.03	0.03		0.09*	0.04		-		
←Emergent Literacy	0.05**	0.02		0.07**	0.02		0.14**	0.04		0.06	0.03	
←Problem behaviors	-			0.01	0.01		-			-		
PIHLN			7.3%			4.9%			15.3%			12.3%
←Child age of assessment	-0.11**	0.03		-0.10*	0.05		-			-0.15*	0.06	
←Income-to-needs ratio	-			0.06	0.04		-			-0.08	0.05	
←Maternal employment	-0.07	0.04		0.04	0.05		-0.12*	0.05		-0.08	0.05	
←Parental education	0.02	0.02		-			-			0.02	0.02	
←Emergent Literacy skills	0.07**	0.02		0.05**	0.02		0.09**	0.02		0.09**	0.03	
←Problem behaviors	-			-			-0.01	0.01		-		
PIHLN			12.7%			9.0%			9.9%			9.5%
←Child age of assessment	-0.25	0.15		-0.19	0.14		-			-0.42*	0.21	
←Income-to-needs ratio	-			0.21	0.12		-0.37	0.24		-		
←Maternal employment	-			0.14	0.16		-			-		
←Parental education	0.36**	0.07		0.19*	0.08		0.24*	0.11		0.05	0.06	
←Emergent Literacy skills	0.16**	0.06		0.21**	0.06		0.18*	0.09		0.29**	0.09	
←Problem behaviors	-0.05*	0.03		-			-0.03	0.03		-		
Problem behaviors (mean)			11.7%			20.4%			24.5%			11.9%

←Child age of assessment	-		0.73	0.46			0.90	0.55
←Income-to-needs ratio	0.50	0.41	0.47	0.36	1.50	0.94	0.85	0.70
←Maternal employment	-		-0.90	0.55	-		-	
←Parental education	-		-		-		0.41*	0.21
←Emergent Literacy skills	-0.48**	0.17	-0.89**	0.21	-0.53	0.34	-0.52*	0.23
←Problem behaviors	0.38**	0.08	0.35**	0.09	0.42**	0.10	0.22*	0.09
←PIS	-0.49	0.65	0.78	0.73	0.82	0.87	-0.13	0.55
←PIHLN	0.92	0.72	1.43*	0.68	-1.20	1.11	0.40	0.76
←PIHCUL	-0.03	0.20	0.12	0.20	-0.19	0.29	-0.09	0.24

Note. A dash means the parameter was set as 0. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities.

*p < .05; **p < .01.

APPENDIX E

MULTIGROUP COMPARISONS FOR STUDY 1

Table E1

Fit Indices of Baseline Models and Structural Invariance Models for Six Racial/Ethnic pairs

Pairs	Models	χ2	Y-Bχ2	df	p	CFI	RMSEA	∆Y-Bχ2	∆df	p
Vocabulary										
W vs. BL	Baseline	154.44	60.49	52	0.20	0.982	0.029			
	Structural invariance	207.25	111.27	80	0.01	1.000	0.035	90.98	28	0.00
W vs. EHIS	Baseline	121.87	57.36	60	0.57	0.985	0.023			
	Structural invariance	157.52	94.77	86	0.24	0.961	0.031	59.93	26	0.00
W vs. SHIS	Baseline	94.89	40.45	50	0.83	0.999	0.008			
	Structural invariance	165.10	99.08	80	0.07	0.945	0.040	131.68	30	0.00
BL vs. EHIS	Baseline	146.79	60.86	54	0.24	0.977	0.032			
	Structural invariance	207.74	111.08	81	0.01	0.943	0.041	77.51	27	0.00
BL vs. SHIS	Baseline	128.35	44.40	40	0.29	0.986	0.031			
	Structural invariance	164.74	74.31	55	0.04	0.963	0.042	86.69	15	0.00
EHIS vs. SHIS	Baseline	91.43	38.78	50	0.88	1.000	0.004			
	Structural invariance	162.10	95.93	81	0.12	0.916	0.047	115.41	31	0.00

Math										
W vs. BL	Baseline	121.38	45.54	46	0.49	1.000	0.012			
	Structural invariance	179.94	99.99	78	0.05	0.970	0.029	105.45	32	0.00
W vs. EHIS	Baseline	89.55	37.76	52	0.93	1.000	0.000			
	Structural invariance	143.00	81.83	82	0.48	1.000	0.016	80.26	30	0.00
W vs. SHIS	Baseline	111.15	51.89	56	0.63	1.000	0.000			
	Structural invariance	180.35	109.69	82	0.02	0.942	0.039	120.96	26	0.00
BL vs. EHIS	Baseline	90.21	35.88	50	0.93	1.000	0.001			
	Structural invariance	141.78	76.74	78	0.52	0.978	0.024	78.44	28	0.00
BL vs. SHIS	Baseline	103.57	34.38	38	0.64	0.992	0.022			
	Structural invariance	185.05	98.46	71	0.02	0.942	0.043	141.64	33	0.00
EHIS vs. SHIS	Baseline	97.15	41.40	52	0.85	0.996	0.012			
	Structural invariance	152.02	88.53	83	0.32	0.931	0.038	83.07	31	0.00
Literacy										
W vs. BL	Baseline	213.56	74.40	50	0.01	1.000	0.045			
	Structural invariance	272.12	134.80	80	0.00	1.000	0.049	97.67	30	0.00
W vs. EHIS	Baseline	134.72	56.82	56	0.44	0.975	0.030			
	Structural invariance	172.98	97.49	84	0.15	0.943	0.037	65.91	28	0.00
W vs. SHIS	Baseline	130.71	55.95	52	0.33	0.972	0.034			
	Structural invariance	200.64	117.93	81	0.00	0.900	0.051	124.21	29	0.00
BL vs. EHIS	Baseline	220.39	80.33	52	0.01	0.926	0.054			
	Structural invariance	272.32	132.82	78	0.00	0.885	0.054	78.24	26	0.00
BL vs. SHIS	Baseline	199.98	70.44	46	0.01	0.946	0.051			
	Structural invariance	277.08	138.32	75	0.00	0.885	0.058	113.79	29	0.00
EHIS vs. SHIS	Baseline	138.65	60.93	56	0.30	0.944	0.041			
	Structural invariance	195.04	113.15	85	0.02	0.841	0.056	85.72	29	0.00
Social skills										
W vs. BL	Baseline	30.29	7.98	22	1.00					
	Structural invariance	69.62	32.69	45	0.91	1.000	0.000	73.68	23	0.00
W vs. EHIS	Baseline	18.64	4.37	18	1.00	1.000	0.000			
	Structural invariance	61.06	30.11	45	0.96	1.000	0.000	78.72	27	0.00
W vs.	Baseline	40.77	13.26	26	0.98	1.000	0.000			

SHIS	Structural invariance	90.99	47.31	48	0.50	0.997	0.009	89.16	22	0.00
BL vs. EHIS	Baseline	74.45	26.30	42	0.97	1.000	0.000			
	Structural invariance	142.54	77.03	74	0.38	0.965	0.028	120.82	32	0.00
BL vs. SHIS	Baseline	52.80	11.73	18	0.86	1.000	0.000			
	Structural invariance	103.76	45.79	42	0.32	0.988	0.019	86.38	24	0.00
EHIS vs. SHIS	Baseline	49.07	12.59	20	0.89	1.000	0.000			
	Structural invariance	Cannot be conducted due to numerical problems								
Problem behaviors										
W vs. BL	Baseline	27.90	6.12	18	1.00	1.000	0.000			
	Structural invariance	70.51	31.67	43	0.90	1.000	0.000	78.00	25	0.00
W vs. EHIS	Baseline	25.08	8.92	30	1.00	1.000	0.000			
	Structural invariance	58.47	30.89	51	0.90	1.000	0.000	57.75	21	0.00
W vs. SHIS	Baseline	40.64	13.22	26	0.98	1.000	0.000			
	Structural invariance	87.64	45.68	48	0.57	1.000	0.000	84.84	22	0.00
BL vs. EHIS	Baseline	31.21	7.53	20	0.99	1.000	0.000			
	Structural invariance	93.25	41.71	44	0.57	0.999	0.005	96.00	24	0.00
BL vs. SHIS	Baseline	54.18	12.03	18	0.85	1.000	0.000			
	Structural invariance	11.03	48.78	42	0.22	0.983	0.023	14.47	24	0.94
EHIS vs. SHIS	Baseline	52.83	17.85	28	0.93	1.000	0.000			
	Structural invariance	99.82	52.78	51	0.41	0.980	0.022	79.57	23	0.00

Note. W = white; BL = black; EHIS = English-speaking Hispanic; SHIS = Spanish-speaking Hispanic.

Table E2

Pairwise Comparisons between the Minority Groups

IV	→	DV	*Black*		*English-speaking Hispanic*		*Spanish-speaking Hispanic*		*Pairwise comparisons*
			B	*SE*	*B*	*SE*	*B*	*SE*	
PIS									
	→	PPVT-I	-0.25*	0.12	0.15	0.21	0.46*	0.23	SHIS > B*
	→	PPVT-S	0.07	0.05	-0.07	0.11	-0.07	0.10	
	→	WJAP-I	-0.08	0.07	0.10	0.07	0.04	0.11	B > SHIS**
	→	WJAP-S	0.02	0.04	-0.03	0.04	0.04	0.05	SHIS > B*
	→	WJD-I	-0.24*	0.10	-0.08	0.14	-0.01	0.12	B > EHIS*, SHIS*
	→	WJD-S	0.12*	0.05	0.09	0.08	0.04	0.09	
	→	SSRS-I	-0.41	0.69	1.77	1.06	0.21	0.77	EHIS > B*
	→	SSRS-S	0.05	0.49	-0.46	0.66	-	-	
	→	PB	0.78	0.73	0.82	0.87	-0.13	0.55	
PIHLN									
	→	PPVT-I	0.08	0.12	-0.23	0.21	0.28	0.31	
	→	PPVT-S	-0.04	0.07	0.10	0.10	-0.22*	0.11	SHIS > BL*, EHIS**
	→	WJAP-I	-0.03	0.08	-0.18*	0.08	-0.24	0.18	
	→	WJAP-S	-0.02	0.04	0.07	0.05	0.13	0.08	
	→	WJD-I	0.03	0.10	-0.11	0.14	0.07	0.15	
	→	WJD-S	-0.10*	0.05	0.03	0.08	-0.15	0.10	
	→	SSRS-I	-0.06	0.59	0.19	1.07	0.68	0.83	
	→	SSRS-S	0.43	0.45	-0.17	0.77	-	-	B > EHIS*
	→	PB	1.43*	0.68	-1.20	1.11	0.40	0.76	EHIS > SHIS*
PIHCUL									
	→	PPVT-I	-0.04	0.03	0.03	0.05	-0.10	0.10	
	→	PPVT-S	0.03*	0.02	0.01	0.03	0.04	0.04	
	→	WJAP-I	-0.01	0.02	0.00	0.03	0.02	0.05	
	→	WJAP-S	0.00	0.01	0.00	0.02	-0.03	0.02	
	→	WJD-I	-0.04	0.03	0.05	0.04	-0.02	0.06	
	→	WJD-S	0.02	0.02	-0.02	0.02	0.02	0.03	
	→	SSRS-I	0.04	0.19	0.08	0.37	-0.01	0.24	EHIS > B**
	→	SSRS-S	-0.44**	0.13	-0.10	0.28	-	-	
	→	PB	0.12	0.20	-0.19	0.29	-0.09	0.24	

Note. The parameters were unstandardized estimates. A dash means that the parameter was set as 0. PIS = school-based involvement; PIHLN = home-based involvement in learning activities; PIHCUL = home-based involvement in cultural activities; I = intercepts; S = slopes; PPVT = Vocabulary; WJAP = mathematics; WJD = literacy; SSRS = social skills; PB = problem behaviors.

*p < .05; **p < .01.

APPENDIX F

FACES SURVEY ITEMS FOR TEACHER ATTITUDE AND CLASSROOM CLIMATE

Table F1

Teacher Attitude of Parental Involvement

Survey Items		Descriptions
Teachers reported on the following questions: How well do each of the following statements describe the parents of the children in your class?		
1	Q21A_L	Parents want to be involved in Head Start
2	Q21B_L	Parents have the time to be involved
3	Q21C_L	Parents work with child at home
4	Q21D_L	Parents have positive attitude
5	Q21E_L	Parents are easy to motivate
6	Q21F_L	Parents think early education is important
7	Q21G_L	Parents feels responsible for education
8	Q21H_L	Parents believe they can help child
9	Q21I_L	Parents are able to help child learn
10	Q21J_L	Parents ask for your help with child
11	Q21K_L	Parents are honest with you
12	Q21L_L	Parents trust Head Start Staff

Table F2

Classroom Climate of Parental Involvement

Survey items		Descriptions
Teachers reported on the following question: Now, we would like to know how much parents of children in your class participated in Head Start activiites since school started last fall?		
1	Q21A_L	Attended an open house
2	Q21B_L	Attended a parent/teacher conference
3	Q21C_L	Helped prepare classroom materials
4	Q21D_L	Helped with field trips
5	Q21E_L	Helped with parties/served snacks
6	Q21F_L	Helped in the library or computer lab
7	Q21G_L	Helped in the office,cafeteria,etc
8	Q21H_L	Worked with children in the classroom
9	Q21I_L	Helped with fundraising
10	Q21J_L	Helped with newsletter
11	Q21K_L	Helped involve other parents
12	Q21L_L	Ate a meal in their child's class

APPENDIX G

CORRELATION MATRICES BY RACIAL/ETHNIC GROUPS FOR STUDY 2

	Variables	1	2	3	4	5	6	7	8	9	10
		White									
1	Home-based involvement in cultural activities 1997	-									
2	Home-based involvement in learning activities 1997	.289**	-								
3	Home-based involvement in cultural activities 1998	.505**	.279**	-							
4	Home-based involvement in learning activities 1998	.286**	.577**	.291**	-						
5	School-based involvement	.207**	.248**	.267**	.260**	-					
6	Teacher teaching experiences	-.076**	.063**	-.121**	-.057**	-.071**	-				
7	Teacher education	-.013**	-.043**	-.016**	.044**	.048**	-.066**	-			

	Variables	1	2	3	4	5	6	7	8	9	10
8	Classroom climate	-.058**	.109**	.092**	.123**	.137**	.112**	-.065**	-		
9	Teacher attitude	-.025**	.123**	.022**	.079**	.117**	.119**	-.004	.684**	-	
10	Global quality	.021**	.065**	.015**	.061**	-.080**	.030**	.121**	-.052**	.059**	-
11	Quality of teacher-child interaction	.039**	.055**	.076**	.072**	.103**	.001	.036**	-.185**	-.048**	.562**
					Black						
1	Home-based involvement in cultural activities 1997	-									
2	Home-based involvement in learning activities 1997	.442**	-								
3	Home-based involvement in cultural activities 1998	.514**	.366**	-							
4	Home-based involvement in learning activities 1998	.348**	.561**	.443**	-						
5	School-based involvement	.298**	.271**	.451**	.305**	-					
6	Teacher teaching experiences	-.091**	.000	-.046**	.085**	-.064**	-				
7	Teacher education	.045**	.157**	.045**	.040**	.061**	-.229**	-			
8	Classroom climate	-.036**	-.006**	.006*	-.015**	-.021**	.082**	.017**	-		
9	Teacher attitude	-.003	.046**	.003	.015**	.023**	.145**	.058**	.620**	-	
10	Global quality	-.056**	.040**	.025**	-.031**	.037**	-.129**	.062**	-.073**	-.043**	-
11	quality of teacher-child interaction	-.039**	-.005*	-.010**	-.092**	-.038**	-.144**	.005*	-.005*	.022**	.556**
					English-Speaking Hispanic						
1	Home-based involvement in cultural activities 1997	-									
2	Home-based involvement in learning activities 1997	.398**	-								
3	Home-based involvement in cultural activities 1998	.412**	.209**	-							

	Variables	1	2	3	4	5	6	7	8	9	10
4	Home-based involvement in learning activities 1998	.234**	.570**	.405**	-						
5	School-based involvement	.218**	.251**	.246**	.347**	-					
6	Teacher teaching experiences	.085**	.006	.042**	.049**	.024**	-				
7	Teacher education	-.139**	.020**	.040**	.067**	.165**	-.326**				
8	Classroom climate	-.087**	-.146**	-.054**	-.098**	.268**	.151**	.057**	-		
9	Teacher attitude	.018**	-.085**	-.100**	-.045**	.125**	.200**	-.047**	.476**	-	
10	Global quality	-.122**	.078**	-.155**	-.061**	.048**	.010*	.173**	.093**	.197**	-
11	Quality of teacher-child interaction	-.070**	-.014**	-.071**	-.110**	-.031**	.106**	.185**	.232**	-.011**	.469**
		Spanish-Speaking Hispanic									
1	Home-based involvement in cultural activities 1997	-									
2	Home-based involvement in learning activities 1997	.305**	-								
3	Home-based involvement in cultural activities 1998	.348**	.286**	-							
4	Home-based involvement in learning activities 1998	.269**	.431**	.431**	-						
5	School-based involvement	.063**	.228**	.326**	.198**	-					
6	Teacher teaching experiences	.077**	.083**	.126**	.093**	.193**	-				
7	Teacher education	.006*	-.053**	.142**	-.034**	.131**	-.074**	-			
8	Classroom climate	.093**	.059**	-.040**	.010**	-.057**	.051**	-.150**	-		
9	Teacher attitude	.145**	.083**	-.004	.061**	-.026**	-.009**	-.043**	.653**	-	
10	Global quality	.002	-.048**	.050**	.017**	-.016**	.178**	-.249**	.285**	.124**	-
11	Quality of teacher-child interaction	.095**	.083**	.066**	.074**	.215**	.125**	.162**	-.173**	-.284**	.149**

Note. *$p < .05$; **$p < .01$.

APPENDIX H

MULTIGROUP COMPARISONS BETWEEN THE MINORITY GROUPS FOR STUDY 2

Table H1

Fit Indices of Baseline Models and Structural Invariance Models

Pairs	Models	χ^2	Y-B χ^2	df	p	CFI	RMSEA	ΔY-Bχ^2	Δdf	p
BL vs. EHIS	Baseline	379.43	137.03	38	0.000	0.888	0.076			
	Structural invariance	432.04	224.31	62	0.000	0.812	0.078	88.93	24	0.000
BL vs. SHIS	Baseline	107.08	33.88	30	0.286	0.993	0.021			
	Structural invariance	166.82	83.51	54	0.006	0.962	0.036	109.85	24	0.000
EHIS vs. SHIS	Baseline	71.62	24.41	32	0.829	1.000	0.000			
	Structural invariance	132.93	69.09	56	0.112	0.952	0.037	106.26	24	0.000

Note. W = White, BL = Black, EHIS = English-speaking Hispanic; SHIS = Spanish-speaking Hispanic.

Table H2

Pairwise Multigroup Comparisons between the Minority Groups

DV ← IV	Black		English-speaking Hispanic		Spanish-speaking Hispanic[a]		Pairwise comparisons
	B	*SE*	*B*	*SE*	*B*	*SE*	
PIS 1998							
← PIHCUL 1997	0.06**	0.02	0.05	0.03	-		B > SHIS*
←PIHLN 1997	0.17**	0.06	0.26*	0.12	0.20**	0.07	
←Teaching experience	-0.02	0.02	0.02	0.04	0.07**	0.03	SHIS > B*
←Teacher education	0.00	0.02	0.07	0.04	0.05	0.03	
←Classroom climate	-0.04	0.04	0.29**	0.11	-0.02	0.08	EHIS > B*, SHIS**
←Teacher attitude	0.03	0.04	-0.05	0.08	0.02	0.07	
←Global quality	0.07	0.05	0.06	0.09	-0.03	0.06	
←TC interaction	-0.02	0.03	-.107*	0.05	0.09**	0.04	EHIS > SHIS**
PIHCUL 1998							
←PIHCUL 1997	0.43**	0.05	0.37**	0.08	0.34**	0.86	
←PIS 1998	1.31**	0.18	0.55*	0.27	1.02**	0.27	B > EHIS*
←Teaching experience	0.06	0.08	0.13	0.11	0.09	0.08	
←Teacher education	0.00	0.06	0.13	0.09	0.17*	0.08	
←Classroom climate	0.06	0.12	0.00	0.34	-0.38	0.23	SHIS > B*
←Teacher attitude	-0.06	0.13	-0.22	0.21	0.11	0.23	
←Global quality	0.13	0.17	-0.36	0.25	0.34	0.21	
←TC interaction	0.07	0.09	-0.04	0.18	-0.15	0.13	
PIHLN 1998							
←PIHLN 1998	0.48**	0.05	0.56**	0.09	0.32**	0.07	EHIS > SHIS**
←PIS 1998	0.18**	0.04	0.23**	0.07	0.11	0.07	EHIS > SHIS**
←Teaching experience	0.03*	0.02	0.04	0.05	0.02	0.03	
←Teacher education	-0.01	0.01	0.03	0.02	-0.02	0.03	
←Classroom climate	-0.01	0.03	-0.07	0.07	-0.03	0.07	
←Teacher attitude	0.00	0.03	0.02	0.07	0.04	0.06	

←Global quality	-0.01	0.05	-.078	0.07	0.01	0.05
←TC interaction	-0.03	0.02	-0.03	0.05	0.02	0.04

Note. PIHCUL = home-based involvement in cultural activities; PIHLN = home-based involvement in learning activities; PIS = school-based involvement; TC interaction = quality of teacher-child interaction.

[a]The parameter, PIHCUL 1997 → PIS 1998, was removed from the path model to solve the numerical problems.

*p < .05. **p < .01.

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